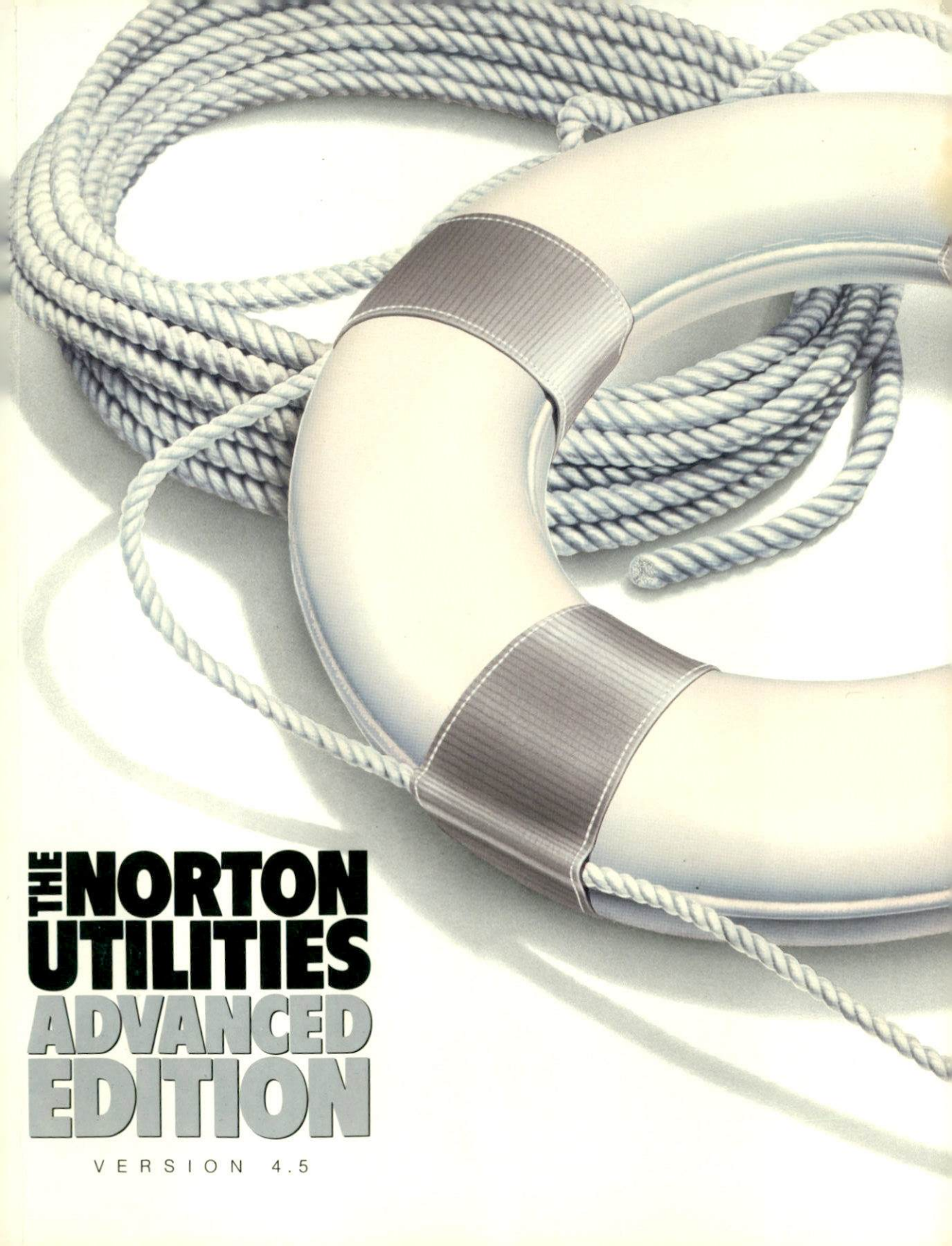

THE NORTON UTILITIES ADVANCED EDITION

VERSION 4.5

The Norton Utilities

Advanced Edition
Version 4.5
Reference Manual

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Before You Begin...

This section tells you how to install the Utilities on your system, and contains information on what's new to this version.

Getting Started

Caution

Do not install the Norton Utilities on your hard disk if it currently has erased files you intend to UnErase, or if you plan to UnFormat your disk.. **You might overwrite the erased files with the Norton Utilities themselves.** If you have erased files to recover on your hard disk, run the Utilities from a floppy disk, recover the files, then proceed with the installation.

The Distribution Disks

This version of the Norton Utilities is supplied on two 3.5-inch disks, and three 5.25-inch disks. The disks are labelled Disk 1, Disk 2, and (for 5.25-inch only), Disk 3.

Hard Disk Installation

The Norton Utilities now include an installation program. To install the Utilities on your hard disk, insert Disk 1 in the A: drive and type:

```
a:install
```

The installation procedure will take you step-by-step through the process of installing the Utilities on your system. At each point in the process, you'll be instructed what to do. At several points the installation procedure will explain to you the reasons for certain actions.

The installation program will search your hard disk for older versions of the utilities. If any are found, the directory containing them will be offered as a default location into which to install the new version of the Utilities. You may specify another directory if you wish.

If you install the new Utilities into your old Utilities directory, you will be asked what to do with the old versions. You may choose to delete them, to save them to a backup directory, or to quit the installation procedure without taking action.

You will also be given the chance to substitute Safe Format for the normal DOS FORMAT command. In the process, DOS FORMAT is renamed to XXFORMAT. See the section on Safe Format for more details on how it works

and why you'll want to use it instead of the DOS FORMAT command.

If you prefer, you can copy all the programs in the Norton Utilities to your hard disk using the standard DOS COPY command. To copy the programs to your hard disk C:

- Insert Disk 1 into the A: drive and type:

```
copy a:*.* c:
```

- Now insert Disk 2 into the A: drive and type:

```
copy a:*.* c:
```

- Finally, if you are using 5.25-inch disks, insert Disk 3 into the A: drive and type:

```
copy a:*.* c:
```

Copying this version of the Norton Utilities to your hard disk using COPY will *not* overwrite versions 3.1 and prior of the Utilities; you must explicitly delete the old versions, or DOS will run the old versions instead of the new ones.

For those of you interested, here's why: The Norton Utilities are now supplied as .EXE files (for example, NU.EXE), whereas earlier versions (versions 3.1 and before) were all .COM files (for example, NU.COM). If you haven't explicitly deleted the .COM files, after copying the new Utilities to your hard disk, you will have two versions of each Utility on your disk (NU.EXE and NU.COM, for example). DOS always runs a .COM file in preference to an .EXE file of the same name, so the new version will never run. That's why you must explicitly erase all the old Norton Utilities programs that end with the .COM extension.

The READ.ME File

There may be a file named READ.ME on Disk 1. If there is, be sure to read it first. It contains the most timely information– information that was too recent to put in the manual. To read the READ.ME file, insert Disk 1 into drive A: and type

```
type a:read.me
```

To print the READ.ME file, make sure your printer is hooked up to your computer and turned on, then type:

```
copy a:read.me prn
```

About This Manual

Organization

Welcome to the Norton Utilities! Like the Utilities themselves, this new manual has been expanded and improved.

This manual is divided into five sections:

- Getting Started
- This introduction, including "What's New in Version 4.5"
- A tutorial on UnErasing files
- Reference to the Norton Utilities
- Index

We have also included two separate books, the first entitled *The Norton Disk Companion: A Guide to Understanding Your Disks*, for those of you who want to learn more about the whats, whys, and hows of disk storage. You certainly don't need to read the book to use the Utilities, but it's there should you be interested.

Finally, *The Norton Troubleshooter* is a step-by-step guide to using the Norton Utilities for diagnosing and solving most all of the things that can go wrong with your disk. You probably won't ever need this booklet, since you can simply run Disk Doctor (NDD) to perform these procedures automatically. However, for the technically inclined among you, and for those few occasions when Disk Doctor can't do the trick alone, a manual approach with this manual will probably fix the problem.

The tutorial on UnErasing is a hands-on, step-by-step walk through Quick UnErase and UnErase, during which you will simulate the recovery of real files, using most of the features of Quick UnErase and UnErase. We think you will find it an enjoyable and efficient way to learn about UnErasing.

The reference section offers a detailed description of each of the Norton Utilities. Most of the descriptions include a

section of examples on using the utility, background information, and tips and suggestions. The reference section starts with a short description of features that are common to several of the utilities.

Typographic Conventions

Special formatting is used throughout this manual to differentiate such items as expository text from commands you type, and output messages from the Utilities. Also, we have used CAPITAL letters many places in the command descriptions. That's only to make the descriptions easier to read; you may mix uppercase and lowercase characters in all your commands.

In the Command Format sections of each chapter, we have employed the following conventions:

- Square brackets mean that the enclosed item is optional; you can include it in the command or omit it, as you wish.
- Text in capital letters is to be typed literally. You can use either capital letters or lowercase letters, but the word(s) must be spelled as they appear in the manual.
- Text in italics stands for something–the name of a file, for example–that you supply yourself. As usual, what you type in these places may be either capitalized or not, as you prefer.

What's New in Version 4.5

Version 4.5 of the Norton Utilities includes several improvements and additions to previous versions. For example, our existing user interface has been refined through the addition of dialog boxes. These pop up onto the screen to notify you of errors or to request information. Existing programs, such as NCD, have been made easier to use. What's more, we've added five new programs in addition to the installation program mentioned under "Getting Started.": Batch Enhancer, File Date and Time, Norton Control Center, Norton Disk Doctor, and Safe Format.

Here's a summary of the changes that have been introduced since Version 4.0.

Six entirely new programs

- **Batch Enhancer** (BE), which helps you make batch files both interactive and interesting.
- **File Date and Time** (FD), which allows you to change the date and time stamp on a file.
- **Norton Control Center** (NCC), a nifty new program that allows you to set everything from the cursor size, through the screen colors and keyboard repeat rate, to the current time and date on your computer.
- **Norton Disk Doctor** (NDD), for automatically diagnosing and correcting a variety of problems that can happen to both hard and floppy disks.
- **Safe Format** (SF), an intelligent alternative to DOS's dangerous FORMAT command.

We've also included an installation program to help you get started easier.

Improvements to existing programs

- All programs now support DOS 4.0 and its large disk partitions, DOS 3.3's extended partition, Compaq DOS 3.31's large partitions (partitions greater than 32 megabytes), and PC-MOS/386.

- Many programs have an improved user interface, with dialog boxes and pop-up windows.
- Our popular Norton Change Directory (NCD) now features a directory rename function, speed-key typing to make directory navigation quicker, the ability to rescan the disk or change drives within the program, and the ability to view directory trees in 43-line (EGA) or 50-line (VGA) modes.
- Now it's easier to navigate within our main program, NU. This facilitates both viewing and editing of files and sectors on your disk.
- WipeFile and WipeDisk now support the latest Department of Defense security specification DoD 5220.22-M 116b(2).
- Speed Disk (SD) now allows you to specify the sort order, including the specific placement of files and directories. You can now mark files as unmoveable. This version of Speed Disk is also faster than the previous version.
- Format Recover (FR) can now recover even when the *SAVE* info was never generated (ie, before FR /SAVE was run the first time.) Format Recover now allows you to create a backup FRECOVER.DAT file. Finally, this new full-screen version of Format Recover is easier to use than ever.

In addition to all the above, we've added the reference book *The Norton Troubleshooter.*

UnErasing Files: A Tutorial

This section is designed to familiarize you with the Utilities through use of a hands-on tutorial.

UnErasing Files: A Tutorial

You've just lost a file–not just any file, a *really important* file. Some parts of it are simply irreplaceable; you couldn't reconstruct that file from scratch if your life depended on it.

Before you start thinking about committing hara-kiri, let's see if we can use the Norton Utilities to resurrect that file, so no one will be the wiser.

If you haven't written to the disk since you erased the file, the prognosis for full recovery is excellent. And even if you've used the disk since erasing the file, there's still a good chance you can recover much, if not all, of it. This tutorial will show you how.

To run the tutorial, you'll need the following three files from Disk 3 (Disk 2 if you're using 3.5-inch disks):

TUTORIAL.BAT
RDEMO2.EXE
TUTORIAL.DBD

If you used the hard disk installation program, these files were already copied to your hard disk; they're in the same directory as the other files from the distribution disks. You can run the tutorial from that directory, copy the three tutorial files to another floppy disk to create a special "tutorial diskette," or run the tutorial from your original distribution disk.

Okay, let's get started. Put the disk or your specially created "tutorial diskette" into the A: drive and type:

```
tutorial
```

(If you're going to run the tutorial from your hard disk instead, first make sure you're in the directory where the three tutorial files were copied to.)

Now it's time to have some fun. Keep in mind that this tutorial is only a simulation. As we begin, just pretend you're working with some files on a floppy diskette which you have just put into your A: drive. We aren't really going to delete and then UnErase files. Instead, we'll simulate the entire process, so you don't have to worry about making mistakes. You'll also be able to run through the tutorial as many times as you like. Remember, from here on in, you aren't *really* working with a floppy in your A: drive, it just looks like it!

Note: If you want to leave this tutorial at any time, simply hold down the Ctrl and Break keys simultaneously. This will return you to the DOS prompt.

Well, where are we? We just logged onto our A: drive, and are sitting at the A: prompt, ready to learn all about UnErasing files so we know how to do this for our own erased files. Let's start by listing the directory of the A: drive. Type:

```
dir a:
```

There's one file on this disk that we don't need: TUTORIAL.NTS is an internal test file that shouldn't have been included on your distribution disk. Before we go any farther, let's erase it. Type:

```
del tutorial.nts
```

Okay, we're ready for the meat of this tutorial. The first thing we want to do is read TUTORIAL.NTS, which will give us a little background on using the Norton UnErase Utility.

You what? You erased it? You mean you actually believed that hokey story I told you a couple of paragraphs ago? Ah me, we need that file. Well, hope springs eternal; let's make sure we really *did* erase it; type:

```
dir a:tutorial.nts
```

Okay, we erased it. My mistake. Let me make it up to you. Type:

```
qu tutorial
```

Goodness, is that all there is to it? Let's see if we really got the file back. Type:

```
dir tutorial.nts
```

Hmm ... looks good so far. Let's TYPE the file. Type:

```
type tutorial.nts
```

All we recovered was an ad! Maybe we should have left it erased.

We did learn one thing in the process of recovering that little ad: Using Quick UnErase on small, single-cluster, files isn't very challenging. If there's one thing I don't want, it's for you to get bored in the middle of my tutorial, so let's make things more interesting. There are two more UnErased files on the disk. We can use QU with no filename after it to "list" the names of those erased files.

```
QU
```

Well. Either I'm lying, or QU is myopic: It reports only one erased file, not two. This bears some deeper examination, a task for which the Norton Utilities is perfectly suited.

Before we go chasing after that missing file using NU, though, let's finish Quick UnErasing the file QU *did* find, ?EATURES.DOC. Answer

```
Y
```

to the prompt, "Quick-UnErase this file (Y/N) ? [Y]"

then press

```
F
```

when QU requests the first character of the filename.

Did you notice that most of the directory entry of FEATURES.DOC remained intact, even though the file was erased? As a matter of fact, only the first letter of the filename is actually overwritten when DOS erases a file; that question mark at the beginning of the filename is simply QU's way of letting you know that the first letter has been lost. The rest of an erased file's directory entry, including its (former) size, time, date, and–most important–its starting cluster number, remains untouched. Of course, just as the data area of an erased file may eventually be overwritten by a new file, at some later date DOS may overwrite the directory entry of an erased file with a new file entry. (We'll come back to this point later.)

Let's take a look at the file we just recovered. If you want, you can look at the file with your favorite editor. That's probably what you'll want to do when you've just recovered an important file, and need to take a close look at it. For our purposes, the DOS TYPE command will work just fine. Type:

```
type features.doc
```

Whoops! We appear to have recovered some information that doesn't belong in this file. When you recover incorrect data using QU, you should immediately become suspicious that you also failed to recover an equivalent amount of correct data. If this were your own file, you'd probably notice that data was also missing.

We have just learned our second, very important, lesson about QU: It is by no means infallible, and you should always check its work before depending on the recovered file. QU tries its best to find the clusters most likely to belong to your erased file, but the only cluster it can be absolutely sure of is the first cluster (because the location

of the first cluster is still in the erased file's directory entry). Most of the time, it will guess correctly; sometimes, and especially when your disk is badly fragmented, it will make mistakes. That's why you've got NU–so you can guide the unerasing process with what you know about your erased file.

Just because QU will occasionally be unsuccessful is no reason to avoid using it. As a matter of fact, it's *always* safe to try recovering a file with QU first, before pulling out the heavy artillery, NU. When QU isn't quite up to the job, as in the present case, it's easy to undo QU's work; just erase the file again. Let's do that now. Type:

```
del features.doc
```

We're now back where we started. (Well, not quite: we now know that FEATURES.DOC is either fragmented, or partially overwritten; otherwise QU would have recovered it all correctly.)

It's time to fire up NU. At the DOS prompt, type:

```
NU
```

Before we jump into the UnErase menu, let's take a moment to poke around this disk; maybe we'll learn something useful. The selection bar (the inverse video bar) is already on "Explore disk," so press

Enter

to select the "Explore" menu item.

Before we can examine something, we've got to tell NU what it is we want to examine; we do that on this menu. NU has taken a guess and already selected a default item for us to explore; you can see what it is by looking in the box in the lower right corner of the screen, which reads:

```
File name
Root dir
```

How convenient. The default item NU selects is the root directory, which is just what we want. A directory is considered to be a special kind of file, which explains the heading "File name" in the first line of the box. The name in the second line of the box, Root dir, is the name of the selected item. Over on the far left, the word "Directory" tells us that the kind of item we have selected is a directory. (Other items we could have selected are files, sectors, and clusters. A directory, remember, is a special type of file.)

Since Root dir is already selected, we can go immediately to the Edit/display menu. To select a menu item, you can either move the selection bar to it with the arrow keys, and then press the Enter key, or you can press the highlighted and capitalized letter of the item you want–the hot key. We'll usually use hot-key selection in the remainder of this tutorial, because it's easier to talk about, but you can use whichever method you prefer. Now, press

E

to select the Edit/display menu.

Sure enough, there's TUTORIAL.NTS, the file we just Quick UnErased, as well as FEATURES.DOC, which we first QU'ed, and then KO'ed (first Quick UnErased, then re-erased).

As you can see from this display, the first character of FEATURES.DOC has been overwritten. The character that DOS uses to overwrite filenames is the Greek character *sigma*. QU and NU show this overwritten first character as a question mark to indicate that whatever this character used to be before the file was erased is now unknown.

By the way, this display seems to support the hypothesis that I'm lying: It shows only one erased file, not two, as I claim. Hmmm ...

Let's go to the UnErase menu and see if we're more successful recovering FEATURES.DOC than QU was.

Press

Esc

to back up a menu ...

... and press it once more to back up to the Main Menu. Now quickly press

U

to get us to the UnErase menu before I go off on another tangent.

Not quite there yet; this menu gives us the chance to UnErase files on a disk or directory other than the default. We're happy working on the default, so let's press

U

again.

Ugh. Nothing happened. Let's take another look at that menu item ...

By enclosing a menu item in parentheses, NU is trying to tell us that we can't choose it. The reason we can't choose UnErase yet is that we've neglected to tell NU *what* we want to UnErase. Press

S

for Select erased file.

We want to select ?EATURES.DOC. Rather than pressing Down-arrow, followed by the Enter key, to select the filename, let's try something different; type

E

The selection bar moved to the filename ?EATURES.DOC. When you type a filename in the Norton Utilities, the Speed Search feature automatically moves the selection bar to the first name that matches the letters you've typed so far. Since only one filename in this list starts with the letter *e* (the question mark doesn't count in Speed Search), all you had to type this time was one letter. You'll find Speed Search is especially useful when you're selecting from long lists of names; typing just a couple or three characters will

usually get you to the filename you want. (Speed Search typing can also be freely intermixed with cursor-key selection.)

Now press

Enter

to select the highlighted file.

This is the Casino menu (aka Complete Selected Erased File Name): It lets us know the probability of successful UnErasure. Because the first cluster of FEATURES.DOC hasn't been claimed by another file, NU thinks successful UnErasure is possible. (Of course, since we already tried QU'ing this file–with only partial success–we know a little more about this file than NU, so you might want to place a side bet. Keep it small.)

Type:

F Enter

to supply the missing first letter, and move to the next menu.

Aha–this time the selection bar has automatically moved to the UnErase menu item. The selection bar tries to anticipate what you'll need to do next; frequently, you can slide through most of the program very quickly, simply by hitting the Enter key.

Hit the

Enter

key.

Yikes. What have we here? A two-column menu with everything but prices?

Actually, you're looking at the main menu for UnErasing files–really two closely cooperating menus on one page. On the right are all the menu items for tracking down erased clusters; on the left, menu items for manipulating and arranging those clusters into the final file. NU will automatically move the selection bar back and forth between the two sides as necessary, or you can move the bar manually by pressing the Tab key. Because selecting clusters and manipulating them are such closely related functions, it's convenient to be able to see all the choices at once. (You can select menu items only from the column the selection bar is in, however.)

Let's dive right in. Press

```
A
```

for Add new clusters.

The bar moves to the right side, landing on "All clusters automatically."

If you think that choosing All clusters automatically seems like a round-about way to accomplish what QU already did incorrectly, you're exactly right.

Almost exactly. Press

```
A
```

again, for All clusters automatically. What we should have now is the same file that QU recovered, but with one difference: Now we can use all the cluster manipulation and searching tools NU puts at our disposal to "tweak" our file until it's correct.

NU uses the file size in the erased file entry to determine how many clusters need to be recovered; that information is displayed in the second line, which reads:

```
Clusters needed:  4 Clusters found: 4
```

Since we found as many clusters as were in the original file, NU automatically moves the selection bar from the right-side "Find Clusters" column, to the left-side "Manipulate Clusters" column.

Beneath the menu, notice the line that reads:

```
Clusters added to file   6   7   8   9
```

That's a list of the clusters we've found and so far selected to be in the file we're recovering. You can scroll through the list and select a particular cluster with the left and right cursor keys.

Since we already know that at least one of those clusters is an imposter, let's use some of the tools available to us in NU to take a closer look. Press

```
D
```

to Display/edit the found clusters.

Hmm ... the first cluster, cluster 6, looks like the beginning of the file, all right. Press the PgDn key to look at the end of the cluster ...

... and press PgDn again to look at cluster 7.

This looks okay, too. Press PgDn again to look at the end of the cluster (if you forget where you are, the cluster being displayed is indicated in the top left) ...

... and press PgDn once more to look at cluster 8.

There's the problem! Cluster 8 is definitely not part of the file we're trying to recover.

Remember cluster 8–we'll take care of it in a moment. In the meantime, let's look at the last cluster; press PgDn again to look at the last cluster, cluster 9. (You may have noticed that sometimes a cluster's data takes one screen to display, and sometimes two; it just depends on the contents. You can always see which cluster you're looking at in the top left of the display.)

That looks okay. Now press PgDn to look at the end of cluster 9.

Nothing happened. Cluster 9 takes only one screenful to display. It's likely, then, that there's more data after cluster 9 we need to recover, since there's no end-of-file marker in Cluster 9. (This is not a foolproof way of determining the end of a file, since not all programs put end-of-file markers at the end of files they create. But I created this file, and I

did put one there. As you can see, you'll be most successful when you're recovering files you're already somewhat familiar with.)

Okay, back to the Find Erased File's Data menu. Press the

Enter

key, and let's get rid of cluster 8 before we do anything else. Press the

Left-arrow

to move the highlight to cluster 8, and now press

R

to Remove selected cluster.

Now we need to find that missing last cluster. How shall we do that? By using one of the choices over in the "Find Cluster" menu in the right-hand column, of course. But which one?

Let's see, we don't know what cluster or sector our missing piece of file is in, so we can't find a cluster by Cluster number or Sector number. *You* don't know any of the data in the last cluster of the file, and I'm not going to tell you, so we can't find the last cluster by searching for data. (Not quite true: since it's the end of the file, you know it *might* have the end-of-file character, ASCII 26. Then again, it might not.)

What does that leave? We tried All clusters automatically. We could try that again, but since we only need one more cluster, it would seem that Next probable cluster might be a better choice. Let's press

N

to find the Next probable cluster.

Now what? Nothing happened again.

Oh, silly me. You can't choose a menu item when you're not in that menu. Press the

Tab

key to move the selection bar to the right-side menu.

That's better. Now press

N

again.

Much better. NU chose cluster 10, the next sequential cluster, as the most probable one. Sounds reasonable; let's see if it's right. Press the

Enter

key to Display/edit the cluster.

Got it! And yes, the end-of-file marker is there. Just for fun, let's see what character the EOF marker is; press the

F2

hex-format display key.

This screen shows us two views of our data: the hexadecimal representation of our data on the left and the ASCII equivalent on the right. A pair of cursors, one in each window, track together.

The little right arrow midway down the display in the right-hand ASCII window is the end-of-file character. Use the cursor keys (left, right, up, and down) to position the cursor over the arrow.

Now look over at the blinking cursor in the left window: It's sitting on a 1. Each ASCII character in the window on the right corresponds to the two-digit hex number in the hex window on the left, which is why you have to press the arrow key twice to move the ASCII cursor one position. (The second press moves the hex cursor to the second hex digit.)

Let's overwrite this end-of-file marker with a space character. Press the spacebar.

Beep?

Although there are two tracking cursors, one for each window, only one cursor at a time–the one that's blinking–is active. Right now, the blinking cursor is in the hex window; by pressing the spacebar, we tried to enter a space as a hex digit. Since space is no more a hex digit than Q is a decimal digit, NU beeped. Press the

Tab

key to activate the ASCII cursor. The ASCII cursor is now blinking, and the hex cursor has expanded to cover both hex digits; this shows us that the single ASCII character we enter will be displayed in this window as two hex digits.

Okay, press the spacebar.

Much better. All those dots to the right are non-displayable characters; let's type over a few. Type:

```
Cluster's last stand
```

Now type:

Tab `1A`

to enter an EOF marker. (1A is the hexadecimal value for the end-of-file character. You'll see it displayed as an arrow back in the ASCII window.)

Enough of this detour. Press

Enter

(or the Esc key) to move on, and then press

Enter

again to write the changes we just made to the cluster.

We're back where we were a moment ago, when we went off to Display/edit the last cluster (cluster 10). Even though we went to edit that cluster, we still haven't told NU whether we want to add it to the file we are recovering. NU guesses we do and has put the selection bar on Add cluster to file. NU is right; press the

Enter

key to Add this cluster.

Very nice: According to the "Clusters added to file" line at the bottom of the menu, our file now consists of the four clusters numbered 6, 7, 9, and 10. All we need to do now is save the file, which we can do quite handily by pressing:

Tab s

We're done. Let's exit and see if we have beaten QU at its own game. Press

F10

to go directly to the Exit without passing the main menu, and then enter the DOS command:

```
type features.doc
```

Congratulations! You are now so proficient at UnErasing that you can expect everyone at the office to pester you when they have a problem. If you really want to impress them, though, you'd better read on ...

I would have sworn that when I made up this disk I included a file full of helpful hints about recovering erased files. But neither QU nor the UnErase menu of NU seems to know anything about any more erased files. Let's use NU to see if we can find any clues as to its whereabouts. Type:

```
NU
```

and then press the

Enter

key to move to the Explore disk menu.

So far, all you know about this mysterious file I've been ranting about is that it contains hints for recovering erased files. Maybe we should search the disk for the word "recover". Press

S

to Search the disk for data.

Before we start a search, we need to tell NU two things: what to search for, and where to search. As usual, NU takes a guess and chooses defaults for us whenever it can; in this case, it has chosen a default for "Where to search." In the box in the lower right corner of the screen, you can see NU has chosen the Root dir for "Where to search." (No, it doesn't always choose Root dir for every default; it just seems that way.) That's obviously not what we want, however; we want to search the data space. So press

W

to move to the Where to Search menu.

Aha! One of these choices is just right. The best choice is

...

... well it's clearly not the currently highlighted choice, Root dir (again). And we don't want to search All of the disk, because then we'd be looking at the directories and existing files, where we clearly didn't misplace our data. The Data space choice refers to all of the disk outside the system area; if we picked that, we'd again find ourself searching through existing files. So, by process of elimination, we see that we must press

E

to search the Erased file space.

Erased file space is simply that area of the disk that can be, but isn't currently, occupied by files. If my lost file is really on this disk, it has to be somewhere in the erased file space.

We're back in the Search menu, ready to specify the text to search for. Press the

Enter

key, then type:

```
recover
```

(Searches are case-insensitive. You can type in uppercase letters, lowercase letters, or some of both). Now press

Enter

to return to the Search menu.

Ah, NU is doing better now at anticipating our next move; we're ready to start searching, and the selection bar is already on Start search, so press the

Enter

key and hope for the best.

Too fast! Cluster 2 contains the word we're looking for. Press

Enter

to continue.

Good guess again, NU: We *do* want to look at the text. So press the

Enter

yet again.

Vindicated! I knew I'd put that file on the disk. So why couldn't QU or NU find it?

Because its *directory entry* had been overwritten. Remember I said earlier that, just as a file's data clusters could eventually be overwritten by another file's data, so could its directory entry? Well that's what happened here. Which means that before we can recover the rest of this file, we'll have to create a new directory entry for it.

Okay, now we know what we need to do, and we have a pretty good idea of how NU works. So hang onto your keyboard, because the rest of this tutorial is going to move right along. Press the

Esc

key three times to move back to the Main Menu, and then press

U

to move to the UnErase menu. Now press

S

to move to the Select erased file menu. Now you know the reason for the Create file choice in this menu: It's for situations like the one we have now, where your directory entry has been overwritten. Press

Enter

to Create a new file. Then type:

unerase.hlp

for the new filename, and press the

Enter

key.

There we are–now we can select our new file. Press

U

and let's get on with it.

Back at the monster menu. NU has created a file directory entry with the name we specified, the current time, and a size of 0 bytes. We'll fix that last item (the size) after we're done collecting the parts of our file. Which we'll do right now.

Clearly, we need to add some new clusters, so press the

Tab

key to move the menu selection bar to the the right side of the screen.

Since we know from our earlier poking around with the Explore menu of NU that the first piece of our lost file is in cluster 2, we can add that cluster directly; press

C

to select Cluster by number, then type

2

as the first cluster to select. Now press the

Enter

key.

Since we're selecting a single cluster, rather than a range, we can skip this "Ending cluster" box altogether; just press

Enter

again.

We looked at the cluster earlier, so let's just Add it at this time; press

A

to add the cluster. (You can Display the cluster first if you want; if you do, you'll return here.)

Now we're stuck; I don't know where the next cluster of this file is, do you? Let's see what NU thinks; we'll let it select the Next probable cluster. Press

N

Cluster 4, huh? Let's see; press the

Enter

key to display the cluster.

Looks good. It's definitely part of the right file, although it's not clear that it's the next sequential cluster. Let's add it

to the file, then see if it picks up the story where cluster 2 left off. Press

Enter Enter

and then press

D

to Display/edit found clusters.

Phooey–this is not where we wanted to go. We were looking at choices in the left-hand column again, but the selection bar was in the right-hand column, where D means find a cluster by searching for Data. Let's get out of here; press

L

to Leave the search menu ...

... much better. Now press

Tab D

to Display our clusters.

There we go. Now page through the clusters to see if cluster 4 picks up where cluster 2 leaves off. (Remember, the cluster number you're looking at is shown in the upper left of the screen. You'll need to keep one eye on that number to know when you've moved from cluster 2 to cluster 4.)

What a stroke of luck. Not only does cluster 4 pick up the text exactly where cluster 2 left off, but the paragraphs in the clusters are sequentially numbered! Possibly we can use that cue later in searching for any missing clusters.

We've done pretty well by selecting the next probable cluster, so let's do it again; press

Enter Tab N Enter

to grab and display the next probable cluster.

Oh come, now. You really didn't expect the clusters to just line up pretty for you, did you? This is a tutorial, after all. Let's ditch this garbage; press

Enter S

to skip this cluster.

Let's give Next probable one more chance; press

Enter Enter

to select and display the next probable cluster.

Argh. I play by strict rules: Two strikes and you're out, Next probable cluster. Search for data, you're up. Press

Enter S D

and we'll use our ace in the hole: the fact that the paragraphs are conveniently numbered. (The fact that paragraphs are numbered is not as contrived as it may seem. On files that you created yourself, it's quite likely you'll be able to guess some of the text following whatever you're looking at.)

When last we visited cluster 4, we saw a paragraph numbered 3. I would say that searching for paragraph 4 would be eminently logical, so type

T

and into the response box type:

4 . space space

That's the number 4, followed by a period, followed by two hits on the spacebar. You can see that the two trailing spaces are really there by looking at the bottom window, which shows the search data in hexadecimal; the 20 20 at the end stand for your spaces, not your eyesight.

OK, let's search; press

Enter Enter

Cluster 11 this time. Let's take a look. Press

Enter Enter

and ...

... yes, yes, we've got it. (You'll need to press the PgUp key to view the beginning of this cluster, since our highlighted search text is near the end of the cluster.) Let's stuff it into our growing file; press

Enter Enter

to add the cluster.

Not a bad guess, NU: We could find the next cluster by searching for paragraph 5. Now that we've found another cluster, however, there's a good chance Next probable will work again, so press

L

to Leave the Search menu, and then

N Enter

to let NU earn its keep.

I did not include a cluster full of nothing in my file, so this is obviously *not* what we're looking for. Let's give Next probable a second try, though, before we decide to go off searching for data. Press

Enter S

to skip this cluster, and then

Enter Enter

to grab and display the Next probable cluster.

Aha, that looks better. This cluster even has the end-of-file marker in it, so we've likely grabbed all the clusters we need. Let's review the whole file; press:

Enter Enter

to add the cluster, then

Tab D

to Display/edit the found clusters. Now page through the clusters to make sure everything is kosher.

•
•
•

Notice a problem? Check the paragraph numbers carefully ...

Cluster 11 ends with paragraph 4, and cluster 13 starts with paragraph 6. Where's paragraph 5? Press the

Enter

key.

We've got clusters 11 and 13; maybe our missing paragraph is in cluster 12, now possibly overwritten.

Not so fast! Let's not jump to conclusions. Maybe the disk was fragmented when we wrote this file. Our missing cluster (or two–we're only guessing that we're missing a single cluster) could be way down the road, at cluster 100, or something. Let's give it another stab. Press:

Tab N Enter

to let NU pick and display the next probable cluster.

Very nice. We just found paragraph 5, and it looks like we might now have all the pieces. It would appear the only problem is that the last two clusters are in the wrong order. We can fix that. Press

Enter Enter

to add cluster 14, and then press the

Tab

key to move to the cluster-manipulation sub-menu on the left side of the screen.

Now all we need to do is Move selected cluster; make sure that cluster 14 is highlighted in the "Cluster added to file" line, and press the

M

key to Move cluster 14 to its proper place. Now press the

Left-arrow

once to position cluster 14 between clusters 11 and 13, and the

Enter

key to exit Move.

That's it: we're done. If you want, you can press D to Display the entire file; if you're satisfied it's now correct (I'll cheat at this point and tell you it is), press the

S

key to Save the file.

Oops–not quite done yet. Where did this menu come from?

Remember that the reason QU and NU couldn't find this erased file was because its file directory entry was overwritten? (Fortunately, it turns out that's all that was overwritten.) Well, the size of the file was kept in that directory entry; when we asked NU to create a new directory entry, it had no idea how long the file would be, so it chose a 0-length file. In this menu, NU is asking if it should now enter the file size of the file we recovered into the directory entry it created for the file. The choice Adjust file size simply writes the current size of the file into its directory entry; it doesn't actually add or subtract pieces from the file. We do want the directory entry to reflect the size of the file we recovered, so press the

Enter

key and let NU adjust the file size in the directory entry. (The file size will be set to the number of bytes in each

cluster, times the number of clusters found. Most programs can handle this, even if when creating a file they set the size to reflect only the number of bytes in the last cluster *before* the end of file marker.)

We're done. Press F10 to exit. You are now the resident expert in UnErasing.

The Norton Utilities Reference

This section contains information about each of the programs that comprise the Norton Utilities.

About the Utilities

Help

All the Norton Utilities, including the Main Program NU, can be run from the Norton Integrator (NI). In addition to providing an easy-to-use, unified environment from which to run the Utilities, the Integrator also offers a separate help screen for each Utility. Each screen shows the command format of the Utility, a brief description, examples, and a listing of switches. I think of the Norton Integrator as a sort of super on-line quick reference card.

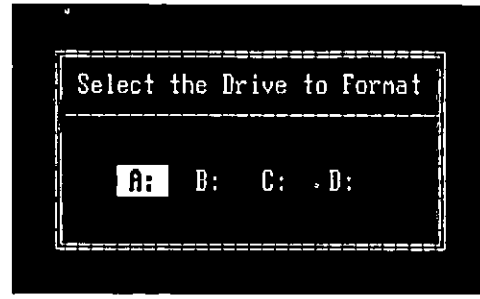
A brief help message is also available directly from each Utility; at the DOS prompt, simply type the utility name, followed by a question mark (?). For example, to display a help message for the TS command, at the DOS prompt type:

```
TS ?
```

NU, the Norton Utility Main Program, also has context-sensitive help available at any time: From within NU, press F1 to view Help.

Dialog Boxes

Many of the programs in the Norton Utilities now report information and make requests via dialog boxes. If you are requested to choose a course of action, use the left and right arrow keys to move the highlight to your choice. Press Enter to accept the choice and dismiss the dialog box. In general, you may press Esc to dismiss a dialog box without taking action.



Dialog Box from Safe Format program

Errorlevel Codes

So that you may use the results of Norton Utilities to make decisions in batch files, all the Utilities return ERRORLEVEL codes. An ERRORLEVEL code of 0 indicates that the Utility completed successfully; an ERRORLEVEL code of 1 indicates an error while running. There are two exceptions: Disk Test returns an ERRORLEVEL 1 if it discovers a bad cluster, and the ASK command within Batch Enhancer (BE) uses ERRORLEVEL codes to indicate which key was pressed.

Pausing Screen Output

Seven of the Norton Utilities–File Attributes, File Date, File Find, File Info, File Size, List Directories, and Speed Disk–are capable of generating multiple screenfuls of output. These Utilities all offer several ways to pause the display for easier reading. Pressing any key (except Ctrl-C, Ctrl-Break, or Esc) while any of these commands are generating output puts you in pause mode, at which time you can press:

Enter	to show the next line (scroll one line)
Esc	to quit the Utility immediately
Spacebar	to display next screenful
Any other key	to resume scrolling

You can also specify /P with any of these commands, which causes pause mode to be entered automatically after the first screenful has been displayed.

Screen Setting Switches

By specifying special *display setting* switches, you can customize nine of the Norton Utility programs to run on MS-DOS machines that are not 100 percent IBM-compatible. You can specify display setting switches in any of the following programs:

- Directory Sort (DS)
- Format Recover (FR)
- Norton Control Center (NCC)
- Norton Change Directory (NCD)
- Norton Disk Doctor (NDD)
- Norton Integrator (NI)
- Norton Utilities Main Program (NU)
- Speed Disk (SD)
- Safe Format (SF)

You may specify any of these switches.

/D*n* Screen driver options:

n=0 The default, for IBM PCs and 100% compatibles.

n=1 Use with BIOS-compatible machines.

Note that only one of the screen driver switches–D0 or D1–should be specified. If you omit the screen driver switch, D0 is used.

/BW Use when running a monochrome composite monitor from a CGA display card. (May be toggled within NU via Alt-F1.)

/NOSNOW

Provide screen deglitching on older CGA display cards. If you experience an annoying flicker on the screen while using any of the programs above, try using this switch to correct the problem.

Logging Output to a File or a Printer

When running certain of the Norton Utilities, such as Time Mark and Text Search, you may find it convenient to redirect output to a file or a printer. Doing so will allow you to capture the utility's normally evanescent screen messages and read them later at will. To redirect output to a printer, add the following instruction to the command that invokes the utility (First make sure your printer is hooked up to your computer and turned on):

```
> prn
```

For example, to print the output from System Information, you would use the command

```
SI > prn
```

To redirect output to a file, add this instruction to the command that invokes the utility:

```
> filename.ext
```

where *filename* and *ext* represent the name and extension of the file that will receive the output. If you wish to append the output to an existing file, use two redirection characters–

```
>> filename.ext
```

Several of the utilities include an optional /LOG switch. This switch is designed to make redirected output easier to read. It does not, by itself, redirect output.

Ask

Ask has now been incorporated into a new program, Batch Enhancer. Please refer to the Batch Enhancer section for complete details on how to use the current version of Ask.

BE–Batch Enhancer

Purpose This program is designed to pull together our batch file enhancement programs (e.g. Ask, Beep) as well as Screen Attributes (SA). These are combined with several new features to create a program with which you can construct more pleasing, interactive batch files.

Command Format

BE *subcommand*

or

BE *filespec*

subcommand
One of the Batch Enhancer subcommands: ASK, BEEP, BOX, PRINTCHAR, ROWCOL, WINDOW, or SA.

Batch Enhancer Subcommands

ASK Ask prompts the user for a response to a question. This allows you to create interactive batch files that support conditional branching (decision-making) based on user responses.

Command Format

BE ASK *prompt*[,*keys*] [DEFAULT=*key*] [TIMEOUT=*n*] [ADJUST=*n*] [*color*]

prompt A text string that will be displayed when the command runs. The prompt generally explains the effect of each choice in the key-list. If a prompt string has embedded spaces and/or commas, the entire string must be enclosed in quotes.

keys An optional list of keys (characters, symbols, or numbers), one of which the user will type as a response.

DEFAULT=key

If no key is entered within the timeout period, or if the user merely presses ENTER, then return this key.

TIMEOUT=n

Time in seconds before the default key is returned. If *n* is zero, or no TIMEOUT is specified, ASK will wait forever.

ADJUST=n

Adjust the return value by this amount. This allows multi-layered menus to be tested in one pass.

color Optional color specificatioon for the text of the prompt. See description of BE Screen Attributes for informatioon on specifying colors.

Description

The Norton ASK command provides an easy way to create batch files that execute different commands, depending on user input at the time the batch file is run.

When the ASK command is invoked, it displays the prompt text, then awaits a response. The prompt will generally list the keys the user may type in response to the ASK command (any of the keys in the key-list) and explain the results of choosing each.

The user responds to ASK by typing any one of the keys in the key-list. The key-list itself is not displayed on screen; only the prompt is displayed.

The key-list is optional. When no key-list is given, any key the user presses is accepted.

After the user chooses one of the keys in the key-list (or any key, if no key-list is specified), ASK returns control to the batch file. ASK passes the key that was chosen by the user as an ERRORLEVEL code. The first choice (key) in the key-list corresponds to ERRORLEVEL 1, the second to ERRORLEVEL 2, the third to 3, and so on (if no key-list is supplied, ASK returns ERRORLEVEL 0 in response to any key being pressed). The batch program can then branch to different labels in the batch file, in accordance with the ERRORLEVEL.

Because of the way batch file ERRORLEVEL codes work, you must list the IF ERRORLEVEL *n* GOTO LABEL statements in descending order of ERRORLEVELs.

For example, if you wanted the following ASK command in your batch file:

```
BE ASK "Run the (E)ditor, (D)atabase, or (Q)uit?", edq
```

then you might create a batch file that looked like this:

```
BE ASK "Run the (E)ditor, (D)atabase, or
(Q)uit?", edq
  if errorlevel 3 goto quit
  if errorlevel 2 goto database
  if errorlevel 1 goto editor
REM     The previous line is not really
REM     necessary, since the editor
REM     commands follow immediately
:editor
     nortn-ed
     goto quit
:database
     cd \progs\db
     db
     goto quit
REM     The previous line is redundant
:quit
```

Since there are three items in the key-list in this example, ASK returns one of three ERRORLEVEL codes: 1, 2, or 3. Level 1 is returned if the user presses the first key in the key-list, e; level 2 is returned if he presses the second key, d; and level 3 if he presses q. The response is case-insensitive; uppercase Q and lowercase q, for example, have the same result.

Immediately following the ASK command are three statements that branch to different points in the batch program, according to the ERRORLEVEL returned by ASK. Note that the statements are arranged so that they check first to see if the highest ERRORLEVEL has been returned (ERRORLEVEL 3, corresponding to a Q

response), then the next highest, and so on, so that ERRORLEVEL 1 is checked for last. Because of the way ERRORLEVEL codes work in batch files, you must always arrange a sequence of statements that branch on ERRORLEVELs in descending order. Practically speaking, this means you should start listing IF ERRORLEVEL GOTO LABEL *n* statements starting with the rightmost key in the key-list, and proceed in order to the leftmost key.

BEEP

Play a tone or a series of tones through the speaker. You can specify a single tone on the command line or a series of tones in a file.

Command Format

BE BEEP [*switches*]

or

BE BEEP [*filespec*] [/E]

filespec Contains a list of tones to play. Wildcard characters may *not* be used in *filespec*. A pathname may be included.

Switches

/D*n* Duration of the tone, in 1/18ths of a second

/F*n* Frequency of the tone, where *n* is cycles per second (Hertz)

/R*n* Repeat the tone *n* times

/W*n* Wait between tones *n*/18ths of a second

/E Echo the text in the file specified

Description

BEEP plays the single tone specified on the command line, or a series of tones listed in a tonefile. The frequency of each tone is given by the /F*n* switch, where *n* is cycles per second. The duration of each tone is indicated by the /D*n* switch, where *n* is in 18ths of a second. To repeat a tone, use the /R*n* switch, where *n* is the number of times the tone is to be repeated. The /W*n* switch inserts a Wait between tones of *n*/18ths of a second.

For example, the command:

```
BE Beep /F440 /D36 /R3 /W18
```

would play a 440 Hz (cycles per second) tone for two seconds (36/18ths of a second), wait 1 second, then repeat that sequence three times (/R3). Switches can be entered in any order.

BEEP can also play a continuous series of tones listed in a file. Enter the tones into the file as if you were entering them on the command line. For example:

```
;
; A two-line tonefile
;
/f330 /d36 /r3 /W18
/f660 /d18
; Put a semicolon before comments
```

This would repeat a two-second, 330 Hz tone three times, waiting one second between each repeat, and then immediately play a 660 Hz tone for one second. The / is optional when you're listing tones in a tonefile.

If these lines were stored in a file called TONEFILE, they could be played with the command:

```
BE Beep tonefile
```

You can enter comments into a tonefile by prefacing them with a semicolon; anything after a semicolon is ignored.

If you use the /E switch, the part of these comments enclosed in quotes will be printed on the screen while the tonefile is being played. Note that hyphens will not be displayed.

Tips and Suggestions

You can use BEEP within a batch file to signal the progress of commands, or to signal an unusual condition. You can place a BEEP with a distinctive tone at the end of a batch file or at intermediate points within the file, to indicate what is happening. BEEP is particularly valuable in batch files that use the IF command to vary their operation. I use BEEP in a batch file to dial my electronic mail service; distinctive BEEPs tell me whether or not I've received mail.

The SA Screen Attributes subcommand can be used in a similar way to provide a visual signal. See the later section on BE SA for more information.

BOX

Draw a rectangle of a specified size and location on the screen.

Command Format

BE BOX *top, left, bottom, right* [SINGLE | DOUBLE] [*color*]

top	Row location of the box's upper left-hand corner
left	Column location of the box's upper left-hand corner
bottom	Row location of the box's bottom right-hand corner
right	Column location of the box's bottom right-hand corner
SINGLE	Draw box with single-width outline
DOUBLE	Draw box with double-width outline
color	Color to draw box with. Refer to BE Screen Attributes for choices

PRINTCHAR

Display a specified character a given number of times at the current cursor location.

Command Format

BE PRINTCHAR *character, repetitions* [*color*]

character	Which character to display
repetitions	Number of times to display the character (up to 80)
color	Color to print characters in. Refer to BE Screen Attributes for choices

ROWCOL

Position the cursor at the specified row and column location and optionally display text.

Command Format

BE ROWCOL *row, col* [,*text*] [*color*]

row	Row to move the cursor to
col	Column to move the cursor to
text	Optional text to display at the new cursor location
color	Color to display text in. Refer to BE Screen Attributes for choices

WINDOW

Draw a window on the screen.

Command Format

BE WINDOW top, left, bottom, right [color] [SHADOW] [ZOOM]

top	Row location of the window's upper left-hand corner
left	Column location of the window's upper left-hand corner
bottom	Row location of the window's bottom right-hand corner
right	Column location of the window's bottom right-hand corner
color	Color with which to fill the window. Refer to BE Screen Attributes for choices
SHADOW	Draw the window with a see-through shadow
ZOOM	Zoom the box while drawing it

Description of BOX, PRINTCHAR, ROWCOL, and WINDOW

The preceding four subcommands may be used together to create interesting graphics for your batch programs. For example, you can draw a window, move the cursor to a location within the window, and write text to the screen within the window (or box). In this way, you can create your own alert and dialog boxes.

Screen Attributes-SA

Control the display of colors and attributes.

Command Format

BE SA *main-setting* [*switches*]

or

BE SA [*intensity*] [*foreground*] [ON *background*] [*switches*]

Description of Settings

Choices for *intensity*:

Bright	Bold	Blinking

Choices for *main-setting*:

Normal	Reverse	Underline

Choices for *foreground* and *background*:

White	Black	Red	Magenta
Blue	Green	Cyan	Yellow

All settings may be abbreviated to their first three letters. Bright and Bold are synonyms for the same attribute.

Switches

/N	Do not set the border color.
/CLS	Clear the screen after changing color attributes.

Description

Screen Attributes lets you control the colors and other characteristics of your display screen.

Screen Attributes automatically sets the color of the border to match the background color; use the /N switch if you don't want to set the border color. (The EGA card generates a borderless display, so you cannot set the color of the border when using an EGA card.)

To have your color choice in Screen Attributes remain in effect, you must first install the ANSI.SYS driver.

Background Info

The results you get with SA vary, depending upon the type of display you are using, the program running, and the particular computer you are using. If the screen can display them, DOS will always use the colors and attributes you set with SA. Many programs set their own attributes, however, and are not influenced by the setting that SA makes. Some programs that set their own attributes will upon exit reset the screen back to the attributes you set with SA; other programs will not.

SA instructs DOS as to which colors and attributes to use via an element of DOS known as the ANSI.SYS driver. For SA to be effective, you must first install the ANSI.SYS driver on your machine. There is no harm in trying to run SA with the driver not installed; SA will simply display a message telling you that it is needed. SA also sets the BIOS color attributes.

Installing ANSI.SYS. Some versions of DOS automatically install the ANSI.SYS driver for you, but with most versions–including IBM's PC-DOS–you must install it yourself. You can easily test to see if the ANSI.SYS driver is installed in your machine by typing the command SA NORMAL; if the you see a message telling you ANSI.SYS is required, then it is *not* installed.

To install ANSI.SYS yourself, first see if you have a file in your root directory called CONFIG.SYS. If you do, add the following line to it; if you don't, create a new file called CONFIG.SYS and put the following line in it:

```
DEVICE=ANSI.SYS
```

Remember to put the CONFIG.SYS file in your root directory. Also, make sure you have copied the file called ANSI.SYS from your DOS disk to your root directory. Now reboot the machine and the driver will be installed. As long as you leave the line in the CONFIG.SYS file in the root directory, the driver will be automatically installed each time you boot up.

Tips and Suggestions

SA is useful in two ways. One is simply to set the color and attributes that you prefer to work with. The other is to call attention to special circumstances, particularly situations that may arise during the course of batch file execution. You can use distinctive settings, such as reverse, blinking, or a red background, to call attention to such situations. I use SA, for example, together with the BEEP command, in a batch file that dials my electronic mail service. Distinctive screen attributes tell me at a glance from across the room whether I've received any mail or not.

The best choice of colors and attributes depends on your personal taste and the characteristics of your own display. For computers with full-color displays, many people find the following combinations attractive:

```
BE SA bright white on blue

BE SA bright yellow on blue

BE SA black on green
```

To bring special attention to the screen, try this command:

```
BE SA reverse
```

Because the results you get with SA vary from display to display, computer to computer, and program to program, you will probably want to experiment to see which combinations you prefer. For ill-behaved programs that set their own attributes but do not reset the attributes you had when they exit, you might want to try using a simple batch file like this one:

```
program.exe
BE SA bright white on blue
```

That way, the screen will be automatically set to whatever you like when the program quits.

General Information about all BE subcommands

Getting Help

To get general help, type:

```
BE ?
```

To get detailed help on a particular subcommand, type:

```
BE command ?
```

E.g., to get help on the WINDOW subcommand, type:

```
BE WINDOW ?
```

Description

Because they can automate many of the repetitive tasks you do every day, batch files can be powerful tools for increasing your efficiency. Unfortunately, however, DOS does not provide the capability to control a batch file in real time, based on input from the user. That omission severely limits the situations where batch files can be used. The Norton BE command integrates this capability into the existing repertoire of batch file commands.

Tips and Suggestions

Note that if you're using an input filespec for BE, then the command BE need not appear on every line within the file, i.e. ASK is the same as BE ASK. You must use BE on each Batch Enhancer command within a batch file, however.

If you use your computer even a moderate amount, batch files can save you a lot of time and effort. I use them for almost everything: to start up my communications program automatically, download electronic mail, and then indicate (using Screen Attributes for visual feedback and BEEP for audible feedback) if I've received mail; to change directories, load special-purpose macros, then run programs; to time many of my computer's operations (using theTime Mark program explained later in this reference); and in lots of other ways.

We've included a file on Disk 3 (Disk 2 for 3-1/2" users) that demonstrates how to use the different subcommands available in Batch Enhancer. Just insert Disk 3 (or 2 if it's 3-1/2") into your A: drive and type:

```
a:
bedemo.bat
```

to view the demonstration. To view the contents of the batch file, type:

```
type a:bedemo.bat
```

Other Examples

If you want to	Type this command
Play a standard beep tone	**BE Beep**

Use BEEP with no switches to generate the computer's standard tone.

Play a 440 Hz tone 3 times **BE Beep /F440 /R3**

Use */Fn* to specify the frequency and */Rn* to specify the number of repetitions.

Play a 1/2-sec, 660 Hz tone twice, pausing 1/2 second between repetitions **BE Beep /F660/R2/D9/W9**

/Dn and */Wn* are given in units of 1/18 of a second, to allow you finer control.

Display red characters on a blue background **BE SA red on blue**

This command will have no effect if you are using a monochrome display adapter.

Display bold characters **BE SA bold**

Beep

Beep has now been incorporated into a new program, Batch Enhancer. Please refer to the Batch Enhancer section for complete details on how to use the current version of Beep.

DS–Directory Sort

Purpose Sort one or multiple directories by name, extension, time, date, or size. In full-screen (interactive) mode, sort and move individual files or groups of files to arbitrary locations in the directory listing.

Command Format for Full-Screen Directory Sort

DS [*directory name*]

Command Format for Sorting from the Command Line

DS *sort-key(s)* [*directory name*] [/S]

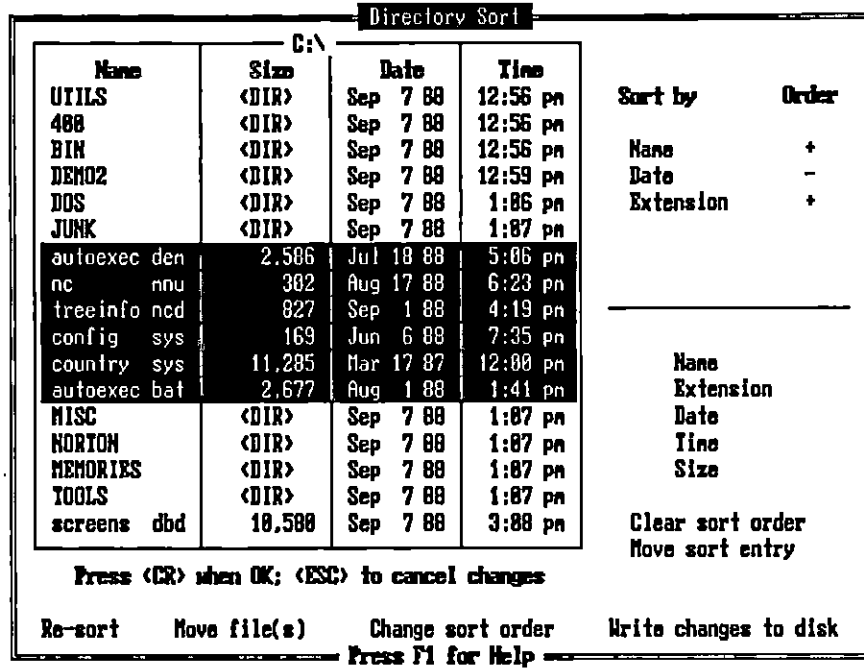
Sort-keys

N	Name
E	Extension
T	Time
D	Date
S	Size

Append a minus sign (-) to any sort-key to reverse the sort order.

Switches

/S Sort Subdirectories (command-line version only)



Directory Sort

General Description

Directory Sort arranges the order in which files are listed in a directory. When a directory is sorted, all subdirectories are grouped first, followed by all files. Files with hidden or system attributes are not moved; this means that Directory Sort shouldn't interfere with copy-protection schemes.

Directory Sort can be run in either of two ways: If you specify one or more sort-keys after the program name, you are running DS from the command line. Directory Sort will automatically sort the directory (or directories) according to the order specified by the sort-keys, then return you to DOS.

If you do not specify any sort orders when you run DS, the program will switch to full-screen, or interactive, mode. In interactive mode, you can sort a directory using the same sort-keys that are available in the command-line mode. In addition, interactive mode lets you move individual files or

groups of files to any location in the directory, so you can "lock down" the position of selected files.

For example, if you always want to see the file called TO-DO at the beginning of your directory listing, you could select this file and move it to the beginning of the directory. Using Directory Sort in interactive mode, you can order your files in a completely arbitrary manner.

Caution: Because DS changes your file directories, you should not interrupt it (by turning off your computer) while it is working; if you do, the logical structure of your disk may be damaged. You can safely break out of DS by pressing Ctrl-Break.

Directory Sort from the Command Line

If you simply wish to sort a directory by Name, Extension, Time, Date, or Size, you can run DS from the command line or a batch file. To run DS from the command line, specify at least one of the sort-keys: N (name), E (extension), T (time), D (date), or S (size). You can combine any number of sort-keys, so that files that are the same by one key can be arranged in order by the next key.

For example, to sort files by extension, and within each extension by name, you could use the command:

```
DS EN
```

The order in which DS ordinarily sorts is smallest to largest (size), earliest to latest (time, date), and in ascending alphabetical order (name, extension). You can reverse the order for any of these sort-keys by placing a minus sign (-) immediately after the sort-key. Thus:

```
DS DT
```

would sort the directory with the oldest file first, proceeding sequentially to the newest file. If you want the newest file at the beginning of the list, type:

```
DS D-T-
```

If you omit the optional *directory-name* when you type the command, as in the examples just shown, DS sorts the current directory. You can tell DS to sort a different directory by specifying it after the sort-keys, as in:

```
DS NE a:\notes\tangled
```

which would sort the subdirectory \NOTES\TANGLED, on the A: drive, by name and extension. You can sort subdirectories along with the specified (or current) directory by using the /S Subdirectory switch.

Full-Screen, Interactive Directory Sort

At times, it's desirable to sort a directory using a standard sort order, but then, for example, move a few heavily used files so that they appear at the beginning of the directory listing, where you can find them quickly. At other times, you may wish to arrange a directory in an order that's not available with the standard sort-keys. You can do either of these tasks by using Directory Sort in its full-screen, interactive mode; this version of DS lets you arrange the files in a directory in any sequence you desire.

To run DS interactively, type the command with no sort-keys. To sort the current directory, type:

```
DS
```

You can also specify the directory to sort by including it on the command line, as in:

```
DS \another
```

Again, since no sort-keys were included on the command line, DS will run in full-screen, interactive mode.

In full-screen mode, DS displays a window that lists all the files in the directory. You can scroll through this listing using the cursor keypad:

Up-arrow	scroll up a line
Down-arrow	scroll down a line
PgUp	scroll up a page
PgDn	scroll down a page
Home	cursor to beginning of listing
End	cursor to end of listing

At the bottom of the display, you'll see commands for re-sorting, moving files, changing the sort order, and writing the changes to disk. You can execute any of these commands by pressing the first letter of the command name. On monochrome screens, the first letter of each command–the letter you press to execute the command–is displayed **Bold**. On color screens, the letter is displayed in yellow.

As in command-line mode, you can sort the directory automatically by Name, Extension, Date, Time, or Size. To sort the directory using any combination of these sort-keys, first set the sort order: Press the C key, to Change sort order. This moves the inverse video bar, called the file selection bar, from the directory window at the left to the sort-key area at the right side of the screen. (You can also press the Tab key to move between the directory window and the sort-key area; successive presses of the Tab key will shuttle you back and forth between these two areas.)

Now set the sort order by selecting any combination of sort-keys. To sort files by date and time, with the most recent file first (the reverse of the "normal" order), first press D, for Date. The word "Date" appears in inverse video in the "Sort by" column, with a plus sign next to it. This indicates that we have so far set sorting by Date, forward. To change to sorting by Date, backward, simply press the - (minus) key; the plus sign changes to a minus sign, indicating we are now set to reverse sort by Date.

Now add the second sort-key, Time: press T, followed by a minus sign to reverse the sort order for this key also. The word "Time" appears in the second row of the "Sort by" column, followed by a minus sign.

We are now ready to actually do the sorting. Press R, for Re-sort–but watch closely: DS is fast!

Re-sorting leaves the selection bar in the sort-key setting area on the right. If you are not satisfied with the sort, you can re-sort by simply clearing the sort order–press C, for Clear sort order–and then setting a different sort order. Once you've got the sort order you want, press W, Write changes to disk, to write the newly sorted directory back to the disk. You can also *move* a sort order; press M, Move.

Before writing the sorted directory to disk, you may wish to do some fine-tuning. In full-screen Directory Sort, you can place files and subdirectories anywhere you want them. Press the Tab key to move the selection bar back to the directory window. Using the cursor keys, move the selection bar to the file or subdirectory you wish to relocate, then press the spacebar to select the file. An arrowhead symbol character appears to the left of the filename, indicating that the file has been selected. You can select as many files at a time as you want. Simply move the selection bar to each file in turn, and press the spacebar to select it. (You can also press the Enter key and the Ins key to select files for moving.)

To move the selected file (or files), press M, for Move file(s). The selected files are automatically grouped together and highlighted. Move the group with the cursor keys to any location in the listing, then press the Enter key to deposit the group of files at that location. (If you change your mind and want to return the files to their original location, press the Esc key instead of the Enter key.) You can continue to move files and subdirectories around until you have arranged your directory in the exact order you want. You can also, at any time, re-sort the directory automatically according to the sort order already set, or you can clear the current sort order and establish a new one.

Once you are satisfied with the new arrangement of the directory, press W, for Write directory to disk. Exit Directory Sort by pressing F10 (Quit), or the Esc key.

Tips and Suggestions

Directory Sort sorts both files and subdirectories, with all subdirectories first, followed by all files. Subdirectories and files are gathered into separate groups to make it easier to distinguish between them and to help DOS speed through directory listings. If you would like subdirectories to appear somewhere other than at the top of a directory listing, use Directory Sort in full-screen mode.

You can use Directory Sort from the command line to sort both a directory and all its subdirectories. You could sort the entire disk, for example, with this command:

```
DS NE \ /S
```

This tells DS to sort by name (N) and extension (E), starting at the root directory (\), and to extend the sorting operation to all subdirectories (/S).

You may find that you wish to keep all your directories sorted in a common order. Some users like the order I prefer best, EN, which sorts by extension and then by name. Since the extension usually indicates the category of each file, sorting first by extension is a convenient way to organize your files.

You can make sorting your directories more convenient by creating a batch file that holds the details of how you want your directories sorted. Using a batch file is especially

handy if you are sorting different directories in different orders. Your batch files might begin by sorting all your directories into the order you generally prefer, using a command similar to that above:

```
DS EN \ /S
```

which would sort all the files on the disk by extension and name. Next in the batch file would be commands to sort particular directories into other orders.

You don't have to maintain a given directory in a single order. I often temporarily sort a directory into a new order, just to see which file is the most recent or the largest. DS works so quickly that you can sort your directories as often as you like.

Examples

If you want to	Type this command
Sort the entire disk by name and extension	***DS NE \/S***

The \ (backslash) tells DS to sort the root directory first. The /S specifies that all subdirectories are to be sorted. This command would therefore sort the entire disk by name (N) and extension (E).

Sort files by date and time — ***DS DT***

This would list the oldest files first.

Sort files newest to oldest — ***DS D-T-***

Put a - (minus sign) after any sort-key to reverse the sort.

Run DS in full-screen (interactive) mode ***DS***

Omit the sort-keys to run DS interactively.

Interactively sort the directory \notes\more ***DS \notes\more***

Full-screen mode is entered automatically when you omit sort-keys. You can still specify a directory to sort, however, as this example shows.

DI--Disk Information

Purpose

Report technical information about a disk, including media type, number of sides, number of sectors per track, number of clusters, number of bytes per sector, number of sectors in the FAT, and so on.

Command Format

DI [*d:*]

Description

DI reports a variety of information about the disk in a specified drive. Some of the information is obtained from the disk's boot record; the rest is obtained from DOS. The following information is included in the report:

System ID: The operating system under which the disk was formatted.

Media descriptor: A hexadecimal value that indicates what type of disk is in your drive. The values you're mostly likely to encounter here are:

F0	A 1.4M 3.5-inch diskette
F8	A hard disk
F9	A 1.2M 5.25-inch diskette or a 720K 3.5-inch diskette
FD	A 360K 5.25-inch diskette
FE	A 160K 5.25-inch diskette
FF	A 320K 5.25-inch diskette

Drive number: 0 means drive A, 1 means drive B, and so on.

Bytes per sector: Usually 512.

Sectors per cluster: DOS creates files in multiple-sector units called clusters. The number of sectors per cluster varies according to media type and operating system revision.

Number of FATs: For all versions of DOS and all media other than RAM disks, this should be 2. For RAM disks, it may be 2 or 1, depending on the RAM disk driver.

Root directory entries: The number of files and subdirectories that may be stored in the root directory. This varies with media type and operating system revision.

Sectors per FAT: Varies with media type.

Number of clusters: The number of clusters in the DOS partition. This figure, which varies according to media type, is useful for determining the type of FAT in use. Disks with 4,085 or fewer clusters have FATs with 12-bit entries. Those with more than 4,085 clusters have 16-bit FATs.

Number of sectors: Equal to the sum of the number of clusters times the number of sectors per cluster and the number of sectors in the DOS system area.

Offset to FAT: The sector number at which the first File Allocation Table begins.

Offset to directory: The sector number at which the root directory begins.

Offset to data: The sector number at which the data area of the disk begins.

Sectors per track: Varies according to media type. Should be 9 for a 360K diskette or a 720K 3.5-inch diskette; 15 for a 1.2M 5.25-inch diskette; 17 for most hard disks; or 18 for a 1.4M 3.5-inch diskette.

Sides: The number of *logical* sides on the disk.

Hidden sectors: This value indicates the starting sector number of the DOS partition (the first sector on the disk is sector 0).

Tips and Suggestions

Much of the information reported by DI is also reported by the Technical Information command (on the Disk Information menu) of the Norton Utilities Main Program. But if you want more detailed information, you'll find it in DI. DI is also useful if what you need is just a straight-forward printout (or file capture) of a disk's vital parameters.

You can also refer to *The Norton Disk Companion* (included with this version of the Utilities) for more information about disks.

Example

If you want to	Type this command
Determine the cluster size of the Bernoulli disk in drive E:	`DI e:`

DT–Disk Test

Purpose Check a disk for physical damage, optionally repair correctable damage, manually mark good clusters as bad, or bad clusters good, and move data in questionable clusters to a safe location.

Command Format

DT [*d*:] [*filespec*] [*switches*]

Switches

/B	Perform Both a disk test and a file test
/C*n*	Mark Cluster *n* as bad
/C*n*-	Mark Cluster *n* as good; opposite action of above
/D	Test the entire Disk for damage
/F	Test all Files on the disk for damage
/LOG	Format output messages to be suitable for printing or logging to a file
/M	Move questionable clusters to a safe location, and mark the questionable clusters as bad
/S	Test files in Subdirectories also (meaningful only when a *filespec* is specified)

Description DT tests a disk for physical damage by noting whether data can be read from the disk without errors.

Disk-read test (/D). Disk Test can run two tests on a disk: a *disk-read* and a *file-read*. The disk-read test, selected with the /D (Disk) switch, reads every part of the disk, whether it is in use or not. The disk-read test checks the system area (boot record, file allocation tables, root directory), and the entire data area of the disk, including active file space, erased file space, and unused file space.

File-read test (/F or *filespec*). The file-read test, selected with the /F (File) switch, reads all active files and directories; the file-read test does not check erased file space, unused file space, or the system area. You can select both the disk-test and the file-test with the /B, Both, switch.

You can further narrow the file-read test by specifying a *filespec*; DT will then check only those files that match *filespec*. For example, you could check all Lotus .WK1 files for potential problems with the command:

```
DT *.wk1
```

When using a *filespec*, you can have DT check files in subdirectories that match the filespec by using the /S switch. For example, the command:

```
DT \*.wk1 /S
```

would test all .WK1 files anywhere on the disk.

When you run DT with a *filespec*, as in the example above, file-read mode is assumed; you do not need to include the /F (File) switch.

Logging (/LOG). Any errors that DT uncovers are displayed on the screen. If you would like a permanent record, you can format DT's output for printing or logging to a file by using the /LOG switch. You must also specify a file name or device to send the logged output to. See the examples at the end of this section.

Cluster marking (/Cn and /Cn-). You can use DT with the /C*n* switch to mark clusters known to be bad. For example, to mark cluster 2001 on the C: drive as bad, type the command:

```
DT C: /C2001
```

If a cluster is already marked as bad, you can have DT re-mark the cluster as usable with the /C*n*- switch, as in:

```
DT C: /C2001-
```

which would effectively undo the first command.

Move-and-mark questionable clusters (/M). Normally, DT simply issues a report listing the clusters that couldn't be read without errors. You can have DT move all clusters read with errors (questionable clusters) to a safe location, and mark the original clusters as bad, by specifying the /M switch, as in:

```
DT C: /M
```

This would cause DT to copy the contents of all clusters that were read with errors to other (good) clusters, and to mark the clusters read with errors as bad. Note that there is no guarantee that DT will be able to read the questionable clusters accurately; DT will do the best it can to read the questionable clusters, but if the clusters cannot be read without errors, it is possible that the copied clusters will contain errors in the data. Reading the copied clusters, however, will not generate disk controller read errors. In other words, you won't know the data was corrupted until you try to use the file.

DT's report. The seriousness of the errors uncovered by DT depends on where the error occurs:

- If the problem lies in the disk's system area (which includes the boot record, file allocation tables, and root directory), you are in danger of losing all data on the disk. Copy the data to other disks as soon as possible, and then reformat your disk (or just discard it, if it's a floppy). If the problem is with a floppy disk, be wary of using the DOS DISKCOPY command; you may just copy the problem to the new disk. A file-by-file copy (with the DOS COPY command) is more likely to succeed.
- If the unreadable portion is in a file and is not already marked as bad, then that file is in danger. DT reports "DANGER NOW". Run DT again with the /M switch to have the program move endangered clusters to a safe location and mark the old clusters as bad. When DT finds an error like this while performing a disk-read test, it automatically performs a file-read test after finishing the disk-read test. The file-read test reports which files are in danger.

- If the unreadable portion is not in use by a file and is not already marked as bad, it is a future hazard for your data. DT reports "DANGER TO COME". DT can eliminate the danger by marking this portion of the disk as "bad sectors," so they will not be used later for file storage. DT will prompt you for permission to mark the bad area.
- If the unreadable portion of the disk is already marked as "bad sectors," there is no danger to your data, and DT reports "no danger." Unlike the situations described above, this is *not* an indication of a deteriorating disk.

Background Info

See the booklet *The Norton Disk Companion* for a complete discussion of the physical and logical organization of a disk, and how DT can repair damaged disks.

Tips and Suggestions

The file-read test, selected with the /F switch, is particularly useful for testing disks that are used for safekeeping or for sending data to others.

The file-read test. If the file-read test reports an error, you can have DT move the data located in the bad cluster to another location. Although only one sector of the cluster may be bad, parts of a cluster cannot be moved; DT copies the entire cluster to a different, known-to-be-good, cluster. If the data is part of a text file, you should then check the file with your word processor. It's possible that the bad sector of the cluster wasn't even in use by your file, or that a small enough portion of the cluster was bad (hard disk cluster sizes vary widely) that you'll be able to reconstruct the damaged file fairly easily.

The disk-read test. The disk-read test, selected with the /D switch, is especially handy for testing disks that are used repeatedly, such as hard disks. Test your main working disks periodically. If the disk-read test shows repeated deterioration of a hard disk, repair or replace the disk without delay.

If DT reports problems with a diskette, try cleaning the magnetic heads of the disk drive, and then test the diskette again. Cleaning the drive may solve the problem.

DT versus CHKDSK. The DOS command CHKDSK also performs a series of tests on a disk. However, the kinds of tests performed by CHKDSK and by Disk Test are quite distinct. The primary function of DT is to uncover physical errors in the disk–i.e., portions of the disk that the hardware cannot read properly. CHKDSK, on the other hand, tests for logical errors–errors in the data contained in the File Allocation Table and directories.

Inconsistent Results. If DT's results are inconsistent, you should check your controller card to make sure it is firmly seated in its slot, and check the ribbon cables to make sure they are firmly attached to both the controller card and the hard disk.

Examples

If you want to	Type this command
Run a Disk Test on the default drive	`DT`
If both the file (/F) switch and the disk (/D) switch are omitted, DT will prompt for input.	
Test all files on the A: drive	`DT A: /F`
DT reports all errors that occur while reading a file. To move clusters read with errors to a new location and mark the original cluster bad, run DT again with the /M switch.	
Test all files on the A: drive, copy questionable clusters to a safe location, and mark the questionable clusters bad.	`DT A: /F/M`
This does it all in one command–tests all files, moves the contents of questionable clusters to a safe location, and marks the questionable clusters as bad.	
Test all .DOC files for bad clusters	`DT *.doc`
This command runs the file-read test; you can omit the /F (File) switch when giving a filespec.	

Run DT from a batch file automatically, with no user intervention required.

```
DT /B/LOG >>DISK.LOG
```

This is a useful command for your AUTOEXEC.BAT file. It runs both (/B) a disk-read and a file-read test, formats the output for logging (/LOG), and redirects the output from the display to a file called DISK.LOG (>>DISK.LOG). The double greater-thans (>>) indicate the output is to be appended to the end of the existing file.

Mark cluster 2001 as a bad cluster.

```
DT /C2001
```

(But it was a good movie!)

FA–File Attributes

Purpose Display, set, or reset any of the four file attributes: archive, hidden, system, and read-only.

Command Format

FA [*filespec*] [*attribute switches*] [*switches*]

filespec Specifies the file or files to operate on. The *filespec* may include a drive, a pathname, and the DOS wildcard characters ? and *. If you omit *filespec*, *.* (all files) is assumed.

Attribute switches

/A	archive
/HID	hidden
/R	read-only
/SYS	system

Switches

/CLEAR Clear (remove) all file attributes.

/P Pause display after each screenful. (Pressing any key also pauses the display.)

/S Include Subdirectories in the search for files that match *filespec*.

/T Show Totals only.

/U Show all Unusual files (files with any attributes set).

Description

Use one or more attribute switches to indicate which attributes you would like to set, reset, or display. Follow the switch by a + (plus sign) to set the attribute, or a - (minus sign) to reset it. For example:

```
FA *.doc /hid+/r+
```

would set all files with extension .DOC to both hidden and read-only.

To see which files have a given attribute without changing the attribute, include the switch without a plus or minus sign. If you type a command that both displays files with a given attribute (or attributes) and changes attributes, only those files that are displayed will be changed. For example, in the command:

```
FA *.doc /r/hid+
```

only those files that are already read-only will be set to hidden . Use the /S switch to have FA work on subdirectories also.

Background Info

Whenever DOS creates a file, it also creates a directory entry that contains various facts about the file. Some of that information–the file's size, and the time and date it was created, for example–you see listed when you execute the DIR directory command.

Not shown by the directory command, however, is other information about the file that DOS has stored in its directory entry. In particular, DOS maintains a field in each file's directory entry that tells which of four "properties" have been assigned to the file. These four properties are known as the hidden, system, read-only, and archive *attributes*. A file can have from none to all four of these attributes assigned.

Archive. The archive attribute indicates that a file needs backing up. DOS sets the archive bit whenever it creates or modifies a file; the DOS BACKUP command (and other backup utilities) resets the archive attribute.

System. The system attribute indicates a DOS or system-related file. Files with the system attribute do not appear in the standard DOS directory listing.

Hidden. The hidden attribute is assigned to critical files to make them harder to access. Hidden files do not appear in the standard DOS directory listing. Hidden files cannot be deleted, hidden program files cannot be executed, and hidden data files cannot be used by most programs. Two of DOS's own files–IBMBIO.COM and IBMDOS.COM–are hidden, which is why they do not show up in directory listings. Microsoft has been assigning both the system and hidden attributes to all DOS internal files. For all practical purposes, the hidden and system attributes have the same effect, although this could change in future versions of DOS.

Read-only. The read-only attribute protects a file from being changed or deleted; it is used to guard a file from accidental erasure or modification.

Tips and Suggestions

There are many cases in which FA can be extremely useful. For example, by assigning the archive bit to certain files after you've performed a backup, you can make multiple backups of important files or control which files will be backed up together.

You can easily protect critical files from accidental erasure by assigning them the read-only attribute. For example, the pair of commands:

```
FA \*.com /S/R+

FA \*.exe /S/R+
```

would protect all the program files on your disk. Be aware, however, that making data files read-only can sometimes interfere with programs that work with those files. Also, some programs modify themselves in response to setup procedures; you will have to turn off the read-only attribute before running the setup routine on such programs, and turn it back on afterward.

You will probably have less reason to work with the hidden and system attributes, although frequently it's convenient to turn off the hidden attribute, either so you

can see what's lurking in your directory or so you can more easily copy system files.

Occasionally, hidden or system files are left behind by programs you have deleted, uselessly taking up space or preventing you from deleting an otherwise empty subdirectory. You can use FA to turn off the hidden and system attributes, so that you can get rid of such clutter:

```
FA /sys-/hid-
```

This is less of a problem now that copy protection is less prevalent, but it still turns up occasionally.

Examples

If you want to	Type this command
See a listing of the attributes of all files	**FA**
When no *filespec* is given, FA operates on all files in the directory. This command is therefore equivalent to FA *.*	
List all files with the system attribute	**FA /sys**
To display files that have one or more file attributes without setting those attributes, specify the attribute(s) with no + or -. Note that multiple attribute switches are ANDed; that is, FA /SYS/R displays only those files that are *both* system and read-only. Note also that /sys cannot be abbreviated /s, since /s means "operate on subdirectories."	
Hide all files in the current directory	**FA /hid+**
To set an attribute, follow it with a +.	
Make all system files read-only and system	**FA /sys/r+**
The /SYS switch with no + or - limits the search to system files, so this command sets the read-only attribute for system files only.	

Unhide files with the extension .DOC **FA *.doc /hid-**

When a *filespec* is given, FA limits its operations to matching filenames. To reset (remove) an attribute, follow it with a -.

Hide system files with the extension .DOC **FA *.doc /sys/hid+**

Giving a *filespec* (*.DOC) causes FA to limit its search to matching files, and the /SYS switch further limits FA to system files. This command thus finds files that have the extension .DOC and are also system files, and then adds the "hidden" attribute.

Hide all files in the current directory and its subdirectories **FA /hid+/s**

The /S switch causes FA to operate on both the current directory and all its subdirectories.

FD–File Date

Purpose Set or clear the date and/or time stamp on a file or files.

Command Format

FD *filespec* [*switches*]

Switches

/S Include subdirectories in the search for files that match *filespec*.

/P Pause display after each screenful of information. Note that pressing any key also pauses the display. Press any key again to continue.

/D*date* Set the date of the file(s) to *date*. If no date is specified, the date is cleared. *Date* should be in the format mmddyy (or the current date format specified by your country code).

/T*time* Set the time of the file(s) to *time*. If no time is specified, the time is cleared. *Time* should be in the format hh:mm:ss (or the current time format specified by your country code).

Description File Date lets you set the date and time stamps on any file or group of files. You set, clear, or update either the date or time of any given *filespec*. If no switches are specified, files are updated to the current DOS date and time.

Tips and Suggestions This program is useful if you use the MAKE program that comes with many compilers. You may also use it to remove the date and time from a file in order to give it a more "generic" look. It is quite useful if you use backup software that backs up files based on their date and time.

FF–File Find

Purpose Locate lost files or directories by searching through all of the directories of one or more disks, or print a file catalog of an entire disk.

Command Format

FF [*d:*] [*filename*] [*switches*]

Switches

/A Search for files on All drives.

/P Pause display after each screenful. (Pressing any key also pauses the display.)

/W List files in a Wide display format.

Description File Find searches across entire disks to find all the files or directories matching *filename*. For each matching file or directory found, FF prints the file or directory's name, size, time and date of creation (or last modification), and the directory in which it was found. File Find will find *hidden* and *system* files that are invisible to the DOS DIR command.

You can use the standard DOS wildcard characters * and ? in the filename. Don't include a path as part of the filename, because File Find automatically searches across all of the disk you specify. If you do not specify a drive, File Find searches the current (default) drive.

If you omit the filename, a listing of all files on the disk is generated.

You can pause the screen output at any time by pressing the spacebar. When you are ready to see more output, press the spacebar again to toggle the output back on.

Tips and Suggestions

File Find is a utility with a dual personality. Used with a filename, File Find is a handy command-line utility, a real time-saver when you're searching for misplaced files. Used without a filename, File Find becomes an especially useful utility in batch files that generate and print directory catalogs. For example, I run the following batch file before I back up my hard disk each week:

```
LD > %1.tmp
FF >> %1.tmp
LP %1.tmp %1.cat
erase %1.tmp
```

Examples

If you want to	Type this command
Find a file named lostfile.hlp	**`FF lostfile.hlp`**
	Searches the default drive for files and directories named LOSTFILE.HLP. You can abort the search at any time by pressing Ctrl-Break or Esc.
Find all files named lostfile, no matter what their extension	**`FF lostfile`**
	When no extension is given, FF searches for all files of the specified name, no matter what their extension.
Search for all .COM files on the B drive	**`FF B:*.com`**
	You can use the DOS wildcard characters * and ? in the filename.
See a catalog of all the files on the disk	**`FF`**
	When you omit the filename, *.* is used, so this command finds all files on the disk. This is equivalent to running the DIR command for each separate directory.

Print a catalog of all files on the disk **`FF > prn:`**

This command uses the DOS redirection character > to send the output from File Find to the printer.

FI–File Info

Purpose

Attach descriptive comments to file and directory names in a directory listing. View a directory listing with attached comments.

Command Format

FI [*filespec*] [*comment*] [*switches*]

Switches

/C	List only files that have comments attached
/D	Delete comment
/E	Edit or enter a comment
/L	Long format; displays entire comment
/P	Pause after each screenful
/PACK	Compress the FILEINFO.FI file
/S	Include subdirectories in directory listing

Description

File Info is a functional replacement for the DOS DIR command that allows you to add comments to some or all of the filenames in a directory, view a directory listing with the attached comments, and edit and delete comments.

Displaying comments. Typing FI with no parameters will display a directory listing equivalent to the one generated by the DOS DIR command. There are two advantages to using FI, however: Any comments you have added will be displayed next to the filename, and you can pause and restart the directory listing at any time by pressing any key (other than Esc or F10). Once you've paused the listing, you can display filenames one line at a time by repeatedly pressing the Enter key, or a screen at a time by repeatedly pressing the spacebar. Press any other key to restart continuous display of the directory.

Displaying Only Files with Comments. With the /C switch, you can ask FI to generate a directory listing of only those file names with comments attached. For example:

```
FI *.doc /c
```

would list all .DOC files to which you had already attached comments.

If you add a long comment to a filename (longer than 36 characters), the end of the comment will be truncated when you're using the standard directory display format that shows file size, time, and date. To display long comments in their entirety, use the /L (Long) switch. For example:

```
FI /L
```

Adding comments. You can add comments to filenames in two ways–by including the comment on the command line; or interactively, with the /E (Edit) switch. For example:

```
FI newbudget.wk1   Actually, the old
version.
```

would add a comment to the file NEWBUDGET.WK1.

Editing comments. It's easier to attach long comments interactively, however, since you then have full editing capabilities. To add a comment to a single file interactively, type the command without the comment, but with the /E switch:

```
FI newbudget.wk1 /E
```

F1 displays a fileinfo editing box into which you may enter the comment (or edit an existing comment), with full use of the cursor keys. In addition to the Home and End and arrow keys, you can also use the following WordStar-compatible commands to edit in the fileinfo box:

Ctrl-rightarrow	Cursor right one word
Ctrl-F	Cursor right one word
Ctrl-leftarrow	Cursor left one word
Ctrl-A	Cursor left one word
Home	Cursor to beginning of line
End	Cursor to end of line
Right-arrow	Cursor right one character
Ctrl-D	Cursor right one character
Left-arrow	Cursor left one character
Ctrl-S	Cursor left one character
Backspace	Delete character left
Del	Delete character under cursor
Ctrl-T	Delete word right
Ctrl-W	Delete word left
Ctrl-Y	Delete entire line
Esc	Abort

After you have entered the comment, press the Enter key to attach the comment to the filename. If you change your mind and want to abort the editing operation (without adding a comment or changing the current comment), press Esc or F10.

Multiple files. At times, you may want to add or edit the comments of a number of different filenames. To edit

successive comments, use the /E switch with no filename:

```
FI /e
```

FI will open the edit box with the first name in the directory. Enter or edit the comment for that file and press the Enter key; FI will automatically display the second filename (and its comment, if it has one). You can continue through the directory, entering or editing the comments of each filename in turn. When FI displays a filename whose comment you don't wish to change (or enter), just press the Enter key to move on to the next filename. You can exit from the editing routine at any time by pressing Esc or the F10 Quit key.

Wildcard characters can be used freely within FI. For example, to add a comment to all the .WK1 files in your directory, just type:

```
FI *.wk1 /e
```

FI will open the edit box and present all your WK1 files.

Deleting comments. You can delete a filename comment from the command line by using the /D switch. Just type:

```
FI killcomm.ent /d
```

Multiple directories. Use the /S Subdirectory switch to list both the current directory and all its subdirectories, and to edit in the current directory and subdirectories.

Background Info

File Info creates a file called FILEINFO.FI in each directory to which you have added filename comments. As you randomly add and delete comments, FILEINFO.FI becomes fragmented, much like most files on a heavily used disk. This doesn't hurt anything, and FI will automatically compact the FILEINFO.FI file before it gets unwieldy. (FI does not compact the FILEINFO.FI file each time you make a deletion, because doing so would unnecessarily slow things down.) If you wish, you can force FI to compact the FILEINFO.FI file; type:

```
FI /pack
```

You might want to do this if you've just made a large number of deletions; it could speed things up a tad until FI gets around to compacting the file automatically. It's entirely optional.

Note that you cannot edit the FILEINFO.FI file itself, nor can you merge two FILEINFO.FI files together. The only way to make changes to FILEINFO.FI is by editing or deleting comments as described above.

Tips and Suggestions

I've found File Info to be especially useful in all my directories that have lots of data files. I'll often add a comment to a letter I send or receive via electronic mail, for example; that's makes it a trivial matter to track down a particular item from weeks and even months ago.

Occasionally, I have files that I think I can safely delete, but prudence dictates I hold onto a while longer–just in case. I use File Info to tag such files with appropriate comments.

Examples

If you want to	Type this command
View a directory with comments	`FI`

File Info is an improved replacement for the DOS DIR command. With File Info, you can view comments and control screen scrolling (by pressing any key).

View a directory listing of only those files with comments attached	`FI /C`

The /C (comment) switch tells FI to omit from the listing all files that have no comments attached.

Display a directory of all .WK1 files `FI *.wk1`

As with the DIR command, you can use wildcard characters. Press the spacebar during the listing to display by pageful; press the Enter key to display a line at a time. Press any other key to resume continuous display.

Add comments to all files interactively `FI /E`

Edit with the cursor keys and WordStar-compatible commands. Press the Enter key to attach the comment and move to the next file; press F10 or Esc to quit the command.

Add comments to all .WK1 files in the \123 directory `FI \123\*.wk1`

Delete comments from all WK1 files in the \123 directory `FI \123\*.wk1 /D`

Display a directory with long comments `FI /L`

Use Long mode to see all 65 characters of a comment.

Add a comment from the command line `FI tag-me Quick comment`

The comment "Quick comment" will be attached to the file named TAG-ME.

FR–Format Recover

Purpose To undo an accidental formatting of a hard disk, thereby making data accessible again.

Command Format

FR [*d:*][/SAVE] [/NOBAK]

Switches

/SAVE Save the information necessary to perform format recovery, and complete file recovery.

/NOBAK Don't create the backup file FRECOVER.BAK.

Description Format Recover is called at different times, for two different but related purposes:

Called preventatively with the switch /SAVE, (usually from your autoexec.bat file), it creates the file called FRECOVER.DAT.

Called without the /SAVE switch, it is used to recover an accidentally formatted hard disk.

In addition, the FRECOVER.DAT file, if present, will be used by NU, QU, and UD when recovering files and directories.

The FRECOVER.DAT file is not absolutely required by either the file or format recovery programs. If it is not present, by using a sophisticated file reconstruction technique, FR will still be able to recover most of your data. Likewise, NU, QU, and UD will also be able to recover files, although their operation may not be as smooth or automatic.

Note: The FRECOVER.DAT file created by this version of FR is not compatible with previous versions. If you need to recover a disk using an FRECOVER.DAT file created by an earlier version, use the earlier FR program.

FR can be run in either full-screen or command-line mode. To run it full-screen, simply type

```
FR
```

To run it in command-line mode, type

```
FR [d:] /SAVE
```

or include that command in a batch file. The [*d:*] argument specifies the disk drive to be protected; you can omit this if the drive you want to protect is the current drive.

The most convenient way to protect your hard disk(s) from accidental formatting is to include the command

```
FR [d:] /SAVE
```

in your AUTOEXEC.BAT file. If you have more than one hard disk, include one command for each hard disk. For example, if you have two hard disks, named C: and D:, you would put the commands

```
FR C: /SAVE
FR D: /SAVE
```

in your AUTOEXEC.BAT file.

Running in full-screen mode. If you run FR in full-screen mode, you will get a menu of four commands.

Use the first command, "Restore Disk Information," when you need to unformat a disk and you have previously used FR to create an FRECOVER.DAT file.

Use the second command, "UnFormat Disk," when you need to recover a disk but you have not used FR to create FRECOVER.DAT (or you have not done so recently).

Use the "Save Disk Information" command to protect your hard disk by creating the FRECOVER.DAT file. This is equivalent to typing FR /SAVE at the DOS command line.

And use the "Exit Format Recover" command to return to DOS.

Recovering data when you have created an FRECOVER.DAT file

If you accidentally format your hard disk, and you have recently run FR /SAVE (or have run FR in full-screen mode and used the "Save Disk Information" command), recovering your data will be easy. Follow these steps:

1. Insert a floppy disk containing the Format Recover program in drive A:. Then type A:FR.
2. From the menu that appears, choose the "Restore Disk Information" command.
3. If you have both an FRECOVER.DAT and an FRECOVER.BAK file on your disk, Format Recover will ask you which one you wish to restore. (You may wish to use the backup file if you have accidentally rerun FR /SAVE after accidentally reformatting your disk. This could happen fairly easily if you have the FR/SAVE command in your autoexec.bat file, and you turned your machine off after the accidental formatting.)
4. When FR has finished its work, run the DOS command NDD. This will clear up any lost-cluster chains that may remain. (These chains would reflect changes made on your disk since FRECOVER.DAT was last saved.)

Recovering data when you have not created an FRECOVER.DAT file

If you accidentally format a disk and you have not used the "Save Disk Information" command (or its FR /SAVE equivalent) to create an FRECOVER.DAT file, you will still be able to restore most of the data on your disk. Here's how to do it:

1. Insert a floppy disk containing the Format Recover program in drive A:. Then type A:FR.
2. From the menu that appears, choose the "UnFormat Disk" command. FR will use a sophisticated file recovery technique to restore most of your files.
3. If you are prompted to do so, insert a diskette with your current version of DOS in drive A.
4. After FR has finished its work, the subdirectories directly under your root directory will be named DIR0000, DIR0001, DIR0002, and so on. To rename the directories, run NCD with the /N switch, and use NCD's R (rename) command.
5. After you have renamed your top-level subdirectories, run NDD. It's unlikely that your disk will have any file-allocation problems at this point, but if it does, NDD will clean them up.
6. With the help of LD (List Directories) and FF (File Find), scan the directory and file structure of your entire disk. Examine your data files and run your programs, as a final check to ensure that everything is restored to normal.
7. If you were prompted earlier to insert a DOS diskette in drive A, copy the file COMMAND.COM to the root directory of your hard disk. This will make your hard disk bootable once again (if you were not prompted for the DOS diskette, you don't need to copy COMMAND.COM).

This approach to disk resurrection has only two limitations:

- FR will not know the names of the subdirectories in your root directory, because the FORMAT command will have overwritten the root directory. It will therefore name the first subdirectory it finds DIR0000, the second DIR0001, and so on, allowing you rename them with the help of NCD. If you are using a version of DOS prior to 3.0, however, you cannot rename directories. To cope with this shortcoming of DOS 2, you will need to create new directories with the right names, then copy files from the old directories to the new.
- All files in your root directory (other than subdirectories) will be lost.

FR will be able to restore all files in directories other than the root directory. And it will know the names of all subdirectories other than those at the root-directory level.

Important notes

Some versions of DOS, including Compaq DOS version 3.1 and AT&T DOS version 2.11, actually overwrite existing information when they format a hard disk, so FR will not work under these operating systems. Fortunately, the latest versions of DOS supplied by Compaq and AT&T have abandoned this practice.

However, you can get around this problem by using the Safe Format program included in this edition of the Norton Utilities (See ***Safe Format—SF***). Safe Format replaces the regular DOS Format command with a program that is easier to use, easier to undo if you make a mistake, and faster all around. It also works with Format Recover to expedite recovery from an accidentally formatted disk.

Format Recover works on hard disks and floppies.

Format Recover and UnErasing

The main purpose of the Format Recover program is to protect your data against loss by accidental formatting. But there is another important benefit to running FR regularly.

The Unremove Directory (UD) and Quick UnErase (QU) utilities, as well as the UnErase portion of the Norton Utilities Main Program, will all be able to carry out their restorative work more intelligently and effectively if you have used FR /SAVE to create an FRECOVER.DAT file.

This is another excellent reason for including FR in your AUTOEXEC.BAT file.

Background Information

The FORMAT command zeros out the root directory and the File Allocation Table but does not overwrite the rest of your data. What gives FR the ability to restore most of a hard disk, even when an FRECOVER.DAT file is not present, is the fact that subdirectories are themselves DOS data files of a particular kind. FR knows a subdirectory when it sees it, and from the contents of the subdirectory it can resurrect most of the data files.

Most files, other than those at the root-directory level, can be restored perfectly by FR's intelligent recovery technique. Highly fragmented files, however, are more susceptible to errors than are files made up entirely of contiguous sectors.

If you run the Speed Disk (SD) utility regularly, you will give yourself an extra measure of protection against data loss via accidental formatting. Still, the best way to ensure the survival of your data (in addition to performing regular backups) is to include the FR /SAVE command in your AUTOEXEC.BAT file, and use Safe Format (SF) instead of DOS's FORMAT command.

Examples

If you want to	Type the following
Collect the data necessary for format recovery of the default drive	**FR /SAVE**
You will probably want to put this command in your AUTOEXEC.BAT file.	
Examine all of FR's options	**FR**
Typing FR by itself brings up a menu of options.	

FS–File Size

Purpose Display the size of one or more disk files, or the total size of a group of files or an entire directory; display the percent slack for the specified files, and optionally determine whether the files will fit on a target disk.

Command Format

FS [*filespec*] [*target-drive:*] [*switches*]

target-drive If you specify a target-drive, File Size checks the drive to see if it has sufficient free space to accommodate the files located by File Size.

Switches

/P Pause display after each screenful. (Pressing any key also pauses the display.)

/S Include Subdirectories in the search for files that match *filespec*.

/T Display Totals only; do not list the size of individual files.

Description File Size generates a report that lists the size of each file found, the total size of all found files, the total amount of disk space occupied by the files, and the percent of wasted space, or slack, for all the files found.

If you include the /S switch, File Size generates a report for the starting directory and each of its subdirectories.

If you include the /T (Totals) switch, File Size omits from the report the listing of each individual file's size.

By including the /P switch, you can have File Size automatically pause after each screenful; alternatively, you can press any key at any time to pause the display of output.

Background Info

DOS sets aside a minimum amount of disk space for a file, no matter how small the *contents* of that file may be (unless the file is of zero length). That minimum file space is known as a cluster, and its size varies with the kind of disk and the DOS version of DOS you are using. If a file grows in size, DOS allocates additional space to it, but only in units of at least one cluster.

This disk allocation scheme has some practical ramifications. The first is that wasted space on a disk is inevitable–it's an inescapable result of the way DOS allocates space. If you write a 2K file to a disk with a 4K cluster size, for example, 2K of space–or half the allotted space–will be wasted. That wasted space is called slack, and in this example, it's equal to a whopping 50 percent.

Standard 360K floppy disk drives use 1K clusters, so a file of 2K or slightly less would waste very little space on such a disk (a file of 2K plus one byte, however, would waste all but one byte of the last cluster, or 1023 bytes.) It's quite possible, then, that you could copy a group of 2K+ files that occupied 600K on a hard disk, onto a 360K floppy disk, since the 2K files might have lots of slack on the hard disk. That's the reason for the target-drive option in FS. The command takes into account the different cluster sizes of each drive to determine whether the files will fit.

Tips and Suggestions

If you formatted a 20-megabyte disk under DOS 2.x, you may be startled to discover the total amount of disk space wasted by DOS 2.x's large 8K clusters. (Use the command: FS \ /S /T to determine the slack for your entire disk.) For large files, large cluster sizes save time (since more data is being fetched each disk access), and further savings are realized from a smaller FAT (see the booklet *The Norton Disk Companion* for a discussion of the FAT, or File Allocation Table), but both these advantages look pretty pale if 7 megabytes of your disk space is wasted in slack. If you find yourself in this situation, you might want to reformat your disk under DOS 3.x, which can set the cluster size as low as 2K. If you do this, however, REMEMBER TO BACK UP YOUR ENTIRE DISK before reformatting. (It's a good idea to back it up twice in a situation like this, when you know the data on a disk is going to be destroyed and the backup disk is definitely going to be used.) You'll have to use DOS 3.x's FDISK command before reformatting; the DOS 3.x FORMAT command or our Safe Format (SF) program won't change the cluster size of a disk that was FDISKed under DOS 2.x.

Examples

If you want to	Type this command
See a listing of the size of all files in the current directory	**FS**

When no *filespec* is given, *.* (all files) is used.

See a listing of the size of all files in the current directory and all its subdirectories.	**FS /S**

Summary information, including the total size of all files and total slack (wasted space), will be displayed for each directory.

Determine the total space taken by all the .COM files in your root directory.

```
FS \*.com /T
```

The /T (Totals) switch suppresses the listing of each individual file, displaying totals only.

Determine the total space taken by all the .COM files on your disk.

```
FS \*.com /S/T
```

The /S option causes File Size to include subdirectories in its report, so this command searches the entire disk for .COM files.

Determine if all the .COM files on your disk will fit on the A: drive.

```
FS \*.com a: /S/T
```

Including a target-drive letter (a:, in this example) causes File Size to determine whether the specified disk has enough space to accommodate the files matched by *filespec*. See the booklet *The Norton Disk Companion* for a discussion of why simply comparing the total size of the files to the amount of free space on the target disk can lead to the wrong conclusion.

List the size of all directories on your disk, the total of all files on the disk, and the overall slack for the entire disk.

```
FS \ /T /S
```

This command includes a pathname (\, for the root directory) but no filename. Therefore, File Size starts from the root and searches all files (*.*) there and in all subdirectories–generating a report on space usage for the entire disk.

LD–List Directories

Purpose

List all directories in either text or graphic (diagram) format. This Utility is used primarily to print or create a file of the directory structure. To view a full-screen, scrollable directory display, and to change directories by pointing, use NCD (Norton Change Directory—refer to the later section on NCD in this reference for information on how to use it).

Command Format

LD [*d*:] [*pathname*] [*switches*]

Switches

/A — List the directories of All drives.

/G — Display the directory tree graphically.

/N — Use in connection with /G to suppress printing of extended IBM graphics characters on non-IBM printers.

/P — Pause display after each screenful (pressing any key also pauses the display).

/T — Display the Total number and size of all files in each directory (in addition to the directory listing).

Description

If you omit the pathname, List Directories generates a listing of all directories on a disk. If you specify a directory name (pathname), LD lists only the subdirectories of the specified directory.

Use the /G switch to see a graphic diagram of the directory structure. You can print any of the listings by using >, the DOS redirection character. For example:

```
LD /G > prn
```

would print a tree diagram of the directory structure of the default drive.

If you have a printer that can't display the extended IBM characters used in the graphic (/G) display, use the /N switch as well as /G.

Tips and Suggestions

The visual, full-screen graphics display of NCD (Norton Change Directory) is nice, but if you want to print the list of directories, or create a file of them, you need to use LD. I use List Directories to automatically create a catalog of the directories on my hard disk before I back it up, by putting a command similar to this one in my backup batch file:

```
LD > dirfile
```

Examples

If you want to	Type this command
See a listing of all directories on the default drive	`LD`
See a graphic listing of all directories on the D: drive	`LD D:/g`
Print a graphic (diagrammatic) listing of all directories	`LD /G > prn:`

The > symbol is the DOS redirection character and can be used with most of the Norton Utilities to redirect output from the screen to a file or device (a printer or communications port, for example).

Change to (or create or delete) a directory by pointing to it in a scrollable display.	`NCD`

LD is not interactive; you can't use it to change directories or delete or add directories. Use NCD (Norton Change Directory) when you want a full-screen visual replacement for the DOS cd (chdir), md (mkdir), and rd (rmdir) commands.

LP–Line Print

Purpose Print text files with a variety of formatting options, including line numbers, page numbers, headers, margins, and page size. Line Print can also print files using the EBCDIC code and can print Wordstar files. Line Print can send a setup string to the printer before printing.

Command Format

LP filespec [where-to-print] [switches]

filespec Specifies the file or files to print. The *filespec* may include a drive, a path, and the DOS wildcard characters ? and *.

where-to-print Specifies where the file should be printed. If you omit this parameter, the file will be printed on the standard printer device. You may specify any device (for example, LPT2: or COM1:) or a filename for where-to-print, but you may not use wildcard characters in the specification.

Switches

Switch	Default value	Description
/T*n*	3	Top margin, number of lines
/B*n*	5	Bottom margin, number of lines
/L*n*	5	Left margin, number of columns
/R*n*	5	Right margin, number of columns
/H*n*	66	Height of page, in lines
/W*n*	85	Width of page, in columns
/S*n*	1	line Spacing
/P*n*	1	starting Page number
/N	off	line Numbering on; use this switch when you want line numbering

/80	on	set 80-column print width
/132	off	set 132-column (condensed) print
/HEADER*n*	1	set type of header n=0: no headers n=1: current date and time n=2: current date and time plus file date and time
/EBCDIC	off	Tells LP file is encoded in EBCDIC, rather than ASCII
//WS	off	Print Wordstar files. Characters in the IBM PC extended character set (ASCII 128-255) are not printed.
/SET:*filespec*	none	Send the SETup string found in *filespec* to the printer before printing

Setup String Format

If you use the /SET:*filespec* option, all the control codes (collectively called the setup string) found in the specified file will be sent to the printer before printing begins. The control codes are listed in the file in the same format as that used in the Lotus 1-2-3 setup string command. Each string can take one of three forms:

nnn where *nnn* is the decimal number for the code you wish to send; three digits are required (use leading zeros as required)

C where *C* is the control character you wish to send

C where *C* is any character you wish to send

As in 1-2-3, you may string the control codes together in one line, one after the other, as in:

```
\AThis is a setup string!\013\010
```

This string would send a Ctrl-A (ASCII 001) to the printer, followed by the letters "This is a setup string!", followed by a carriage return, followed by a line-feed.

The Norton Setup string format includes one extension to the Lotus format: You may separate control codes by carriage returns. For example, the above string could appear in the file as:

```
\AThis is a
setup string.\013
\010
```

If done properly, this can make the setup string easier to read. If you want to send a carriage return to the printer as part of the setup string, you must do so by preceding the ASCII value with the \ character, as shown above. (A new line on the IBM PC actually consists of two characters: a carriage return–ASCII 013–followed by a line-feed–ASCII 010.)

Description

Line Print is a print formatter capable of printing text files to a printer, file, or device (such as COM1: or LPT2:). Line Print provides a handy way to print any text file and is especially useful when you need files printed with line numbers (program listings or legal references, for example). To get line numbers, just include the /N switch. Line Print automatically expands all tab characters to the next tab stop. (Tab stops are located at every eighth column; they cannot be varied in length.)

Line Print formats its output into pages. Each page is headed with the name of the file, the current time and date, and the page number. You can ask LP to include the file's date and time of creation/modification (/HEADER2) or omit the header entirely (/HEADER0).

You can have Line Print print more than one file at a time, by using the DOS wildcard characters ? and/or * in your filespec. (You can also direct the output to any device or file simply by specifying it in the *where-to-print* parameter.) For example, to print all files with the extension .DOC, simply type:

```
LP *.doc
```

Line Print can also print files encoded in EBCDIC (use the /EBCDIC switch) and files using the Wordstar coding method (use the /WS switch).

You can send a setup string to the printer before printing, by using the /SET:filename switch. First create a file with the setup string you want to send; enter the string into the file in the format described above under "Setup String Format." For example, if your printer required the control codes 27 (the Esc character) followed by 22 to change to the red ribbon color, you could enter this line into a file named Red:

```
\027\022
```

Then when you wanted to print the file BEHIND8.BAL in red ink, you'd enter the command:

```
LP Behind8.bal /SET:red
```

Although Line Print has a number of optional switches that allow you to fine-tune the appearance of the printed output, if you have an IBM or compatible printer and want standard 80-column printed output, you will not normally need to use any of these switches. Simply type:

```
LP filespec
```

to print your file with the default margins and settings. You will probably find that the default settings are appropriate for most of your day-to-day printing.

Background Info

The original ASCII standard defined 128 characters, using seven bits. Since computers deal with 8-bit bytes, IBM elected to extend the standard ASCII character set to a full 8 bits and defined special characters–including line-drawing characters and European characters–for the "second set" of 128 characters. Note that all the characters in the extended character set therefore have their eighth bit set.

WordStar and certain other programs were designed before the PC became popular–and before bytes with their eighth bit set had any characters assigned to them. WordStar appropriated the eighth bit for its own purposes, using it to discriminate hard carriage returns from soft carriage returns, and to make other similar distinctions.

If you are using Wordstar or another word processor that attaches special meaning to the eigth bit, you will need to use the /WS switch to suppress the use of the eighth bit.

Tips and Suggestions

Using LP in a batch file can multiply its power and convenience. Say, for example, you find yourself frequently using the LP command with the same long string of options:

```
LP text.fil /ext/header2/132/t2/p90
```

You could simply make a batch file (let's call it PRNTCRAM.BAT) that contained this command:

```
LP %1 /ext/header2/132/t2/p90
```

Then whenever you wanted to print, you'd just type:

```
PRNTCRAM bigfile
```

to print BIGFILE with the options specified in the batch file. You may find it convenient to create a number of batch files for frequently used print formats.

Examples

If you want to	Type this command
Print the file Print-me	`LP print-me`

This will print the file to the standard printer device with the default settings.

Print the WordStar file Wordstar.doc	`LP wordstar.doc /WS`

Use the /WS switch when printing WordStar-formatted .DOC files. WordStar uses the extended characters (characters with the eighth bit set) for its own purposes, not to represent extended characters, so printing a WordStar document without /WS will produce a mess.

Print a program listing with line numbers in condensed mode

```
LP program.c /N/132
```

The /N switch turns on line numbers, and the /132 switch puts IBM-compatible printers into compressed print mode.

NCC–Norton Control Center

Purpose Controls system hardware such as the display, the keyboard, the serial ports, and battery-operated clocks.

Command Format

NCC [*filespec*] [*switches*]

or

NCC [*quick switches*]

filespec Name of a file into which settings have been previously saved using F2 (see description of function below).

Switches

/SETALL	Set all options saved in *filespec*
/CURSOR	Set only the cursor size saved in *filespec*
/KEYRATE	Set only the key rate saved in *filespec*
/PALETTE	Set only the palette colors saved in *filespec*
/COM*n*	Set only the serial port numbered *n* saved in *filespec*
/DOSCOLOR	Set only the DOS colors saved in *filespec*
/DISPLAY	Set only the display mode saved in *filespec*

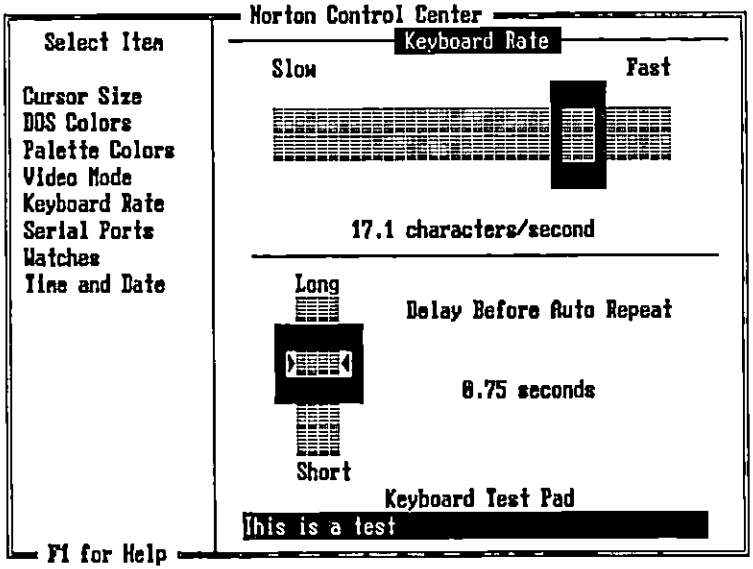
Quick Switches

/BW80	Set display mode to black and white, 25 x 80
/CO80	Set display mode to color, 25 x 80
/25	Set display mode to 25 lines (same as /CO80)
/35	Set display mode to 35 lines (EGA only)
/40	Set display mode to 40 lines (VGA only)

/43	Set display mode to 43 lines (EGA only)
/50	Set display mode to 50 lines (VGA only)
/FASTKEY	Set keyboard rate to fastest value

Description

Whenever you run NCC, a screen-sized window appears in which the different parts of the Control Center are organized. It looks like this:



Norton Control Center—Set Keyboard Rate

There are eight functions available under the Norton Control Center. These are shown in the function menu in the window's upper left-hand corner. You may set the cursor size, change DOS colors, set the palette colors, select which video mode to use, control the rate and speed of keyboard repeat, configure your serial port(s), set up one to four stopwatches, or permanently change (AT-style models) the system time and date. To the right of the screen

is the control area, which also changes depending on the function selected.

You may press F1 to obtain context-sensitive help.

General Notes

Use the up and down arrow keys to select the function you wish to use. Press Enter or the right arrow key to activate the selected function. You may also use hotkeys to activate a function. Press Esc to exit a function without taking action; press Enter to exit the function and put the changes made into effect. Press F1 to get general help, F2 to save current settings, and F10 to quit NCC. These and other keyboard actions are summarized in the chart below:

NCC Keys

Up, Down Arrows Move highlight to a different item in the function menu.

Enter Activate a function. (Also right arrow.)

Esc Exit function and return to function menu. (If the highlight is already in the function menu, Esc quits NCC.)

Tab Move highlight to next field.

***** Reset function to default settings.

F1 Get help.

F2 Save all changes to a designated file. You will be prompted via a dialog box to enter the name of a file to save the current settings to. Running NCC using this file will automatically restore all saved settings.

F10 Quit NCC.

Refer to the sections below covering each menu function for information on how these and other keys work within the functions themselves.

Cursor Size

Move the highlight in the function menu to Cursor Size and press Enter (or press the letter "c" on your keyboard) to activate this function.

The control area at the left of the screen changes to allow you to set the cursor size and shape.

A box at the bottom left of the control area shows the starting position of the cursor. In the center is the cursor control itself. At the bottom right is a box showing the end position of the cursor. A small box at the upper right of the control area shows the current size and shape of the cursor.

Use the up and down arrow keys to toggle lines in the cursor block on and off. Use the left and right arrow keys to move from the starting position to the ending position and vice versa. Use the Tab key also to move from the starting position to the ending position. Pressing Enter moves you back to the function menu, putting any changes to the cursor into effect. Press Esc to exit without making changes to the cursor.

Cursor Size Keys

Up, down arrows
Toggle line in cursor on/off.

Right, left arrows, Tab
Move between starting and ending cursor positions.

***** Revert to default cursor.

Enter Exit cursor size function and save changes.

Esc Exit function and discard changes.

Background information

The height of the cursor varies depending on your display adapter (EGA, VGA, etc.). Lines are numbered starting with 0 at the top. Lines within the cursor may be either on or off. In addition, there are essentially two kinds of cursors; call them solid and inverse. In a solid cursor, the starting position is less than the ending position. A single block of lines, starting somewhere between 0 and the end, is set to "on".

In an inverse cursor, on the other hand, the starting position is greater than the ending position. A block of lines set to "on" begins somewhere between the second line and the next-to-last, when the bottom line is reached, the block wraps back to the top and continues to the ending position. This creates, in effect, two blocks of lines separated by a blank space. (This effect on note available on some displays.)

Tips and Suggestions

Changing the cursor shape is actually quite easy. First, decide whether you want a solid or inverse cursor. It might help to block it out on a few lines on a piece of paper. Next, determine the starting and ending positions.

With this done, activate the cursor size function. An arrow to the left of the cursor control shows what you'll be setting the starting position to. Press either the up or down arrow key until the starting position box contains the correct number.

Now for the ending position. Press the right arrow key. The arrow moves to the left of the cursor control, showing what you'll be setting the ending position to. As with the starting position, press either the up or down arrow key until the ending position box shows the correct number. The example box at the screen's upper right should now show the correct cursor shape. (Some monitors display a different cursor than the one shown; play with Cursor Size until you find the right shape.)

DOS Colors

Move the highlight in the function menu to the item DOS Colors and press Enter (or type the letter "d") to activate this function.

Three color charts appear in the control area, along with a block of example text at the right. The charts are labeled Foreground, Background, and Border. One chart is active at a time, the title bar of the active chart is shown in inverse video.

Use the up and down arrow keys to move the highlight from one chart to another. Tab also moves from one chart to the next. Use the right and left arrow keys to change the color selection within the active chart (the color currently selected is indicated by an arrow). Press Enter to put changes into effect and exit, press Esc to exit without making changes.

DOS Colors Keys

Up, down arrows, TAB
Select color chart.

Right, left arrows
Select color to use within chart.

***** Restore default settings.

Enter Accept changes and exit to function menu.

Esc Discard changes and exit to function menu.

Palette Colors

This option is available only on EGA and VGA equipped machines.

Move the highlight in the function menu to the item Palette Colors and press Enter (or type the letter "p").

The control area now shows the current selection for each color in the palette. The palette contains sixteen colors; you have sixty-four to choose from.

Use the up and down arrow keys (or Tab) to move the arrow highlight from color to color. Use the gray plus and minus keys to change the highlighted color (plus increments the color number, minus decreases it). Press the right arrow to show a color menu; you may then use the left and right arrows to make a new choice, pressing Enter to accept it or Esc to leave the menu. When you're done selecting, press Enter to accept changes and return to the function menu; Esc returns you to the function menu and discards changes. As always, you may restore the default settings at any point by typing an asterisk (*).

Up, down arrows, Tab
Select palette color to change.

Gray plus, minus
Change selected palette color.

Right arrow
Activate color menu for selected palette color (right, left arrows to select, Enter to change, Esc to exit).

***** Restore default palette color selections.

Enter Accept changes and return to function menu.

Esc Reject changes and return to function menu.

Background Info

Your machine uses sixteen colors at a time. These are the colors that programs have to choose from. However, the system is capable of generating more than sixteen colors. You can decide what color to put in what position.

Video Mode

Move the highlight in the function menu to the item Video Mode and press Enter (or type the letter "v") to set the video mode on your display.

The control area changes to show the different video mode you may select from. A checkmark appears next to the option currently in effect.

Use the up and down arrow keys to select which video mode to use. Tab also advances from selection to selection. Press Enter to put the selected video mode into effect and return to the function menu. Type an asterisk to restore the default video mode.

Video Mode Keys

Up, down arrows Select video mode.

***** Restore default video mode selection.

Enter Accept change and return to menu.

Tips and Suggestions

You cannot make any palette selections (menu function three, "Palette Colors") with the video mode set to black-and-white.

Keyboard Rate

This option only works on AT-style and above machines (i.e. those equipped with 80286 and 80386 processors).

Move the menu highlight to the item Keyboard Rate and press Enter (or type the letter "k") to set the rate at which keys will repeat and the amount of time the system will pause before beginning such repetition.

The control area changes to allow you to set the keyboard repetition values. At the top of the display is a control to set the number of characters per second that the keyboard will repeat. This specifies the number of characters that will appear if a key is held down for a full second after the delay period. Use the left and right arrow keys to set this parameter.

In the lower center is a control allowing you to set the amount of time before a key begins to repeat. Use the up and down arrow keys to set this parameter.

At the very bottom of the control area is a small field into which you may type text. This allows you to test the effect of any changes you may have made.

Keyboard Rate Keys

Up, down arrows
Change rate of key repetition.

Right, left arrows
Change delay time between key being pressed and repetition beginning.

***** Restore default values.

Enter Accept changes and return to menu.

Esc Restore default key rate and return to menu.

Serial Ports

Move the menu highlight to the item Serial Ports and press Enter (or type the letter "s") to configure the serial ports on your machine.

The control area changes to show the ports and settings available. A checkmark appears next to the current setting in effect for each parameter. A summary of the settings currently in effect is given at the bottom of the screen.

For each port, you may change the following parameters:

Baud Speed at which communications are to take place: 300, 1200, and 2400 are common settings for communications via modem; 4800 and 9600 are settings for communications with peripheral devices (e.g. serial printers) connected directly to your computer.

Parity Type of error-checking protocol to use. "None" is the most common choice.

Databits Number of data bits to send with each pulse of information.

Stopbits Number of stop bits (a signal that this particular pulse is finished) to send with each pulse of information.

Settings are summarized in chart form. First select which port to configure by pressing the up or down arrow keys. Use the left and right arrow keys to move from parameter to parameter (i.e. from port to baud rate to parity etc.). Use the up and down arrow keys to change the setting of the selected parameter. Press Enter to accept changes and exit; Esc discards changes and returns you to the function menu.

Serial Ports Keys

Up, down arrows
Change port to configure or change selected parameter.

Right, left arrows
Select parameter to change.

***** Restore default settings.

Enter Process changes and exit.

Esc Exit without making changes.

Tips and Suggestions

Remember that you need to select which port to configure first. The port currently being configured has a checkmark next to it in the Port column.

Watches

Move the highlight to the menu item Watches and press Enter (or type the letter "w") to access the system timers and stop watches control.

There are four timers available. Use the up and down arrow keys to select the timer to use. Use the right and left arrow keys to select the function to carry out on the selected timer; you may reset the time or toggle the timer on or off (Start/Pause). Press Enter to initiate the action. Press Esc to exit. Note that this does not discard settings; you must explicitly reset each timer. Typing an asterisk will not restore previous timer settings.

Watches Keys

Up, down arrows, Tab
Select timer to use.

Right, left arrow
Choose function to execute on selected timer: Reset or Start/Pause.

Enter Initiate function.

Esc Return to main function menu.

Background Information

When a timer is started, the start time is recorded. The timer keeps track of elapsed time down to a tenth of a second.

This function is compatible with the Time Mark program.

Time and Date

Move the highlight in the function menu to the item Time and Date and press Enter (or type the letter "t") to set the DOS system time and/or date.

There are two controls: the top one controls the date, the bottom the time. Use the up and down arrow keys or the Tab key to select which to set. The title of the variable currently being set is shown in inverse video.

Use the left and right arrow keys to select the part of the variable to set (e.g. month, date, year for the date; hours, minutes, seconds, meridian for the time). Use the gray plus

and minus keys to increase or decrease the selected quantity. You may also directly type in the desired value.

Press Enter to make changes and exit and Esc to exit without changing.

Time and Date Keys

Up, down arrows, Tab
Select item to set; date or time.

Right, left arrows
Select field within item to set.

Gray plus, minus
Increment, decrement selected field.

Digits 0-9
Directly input value into selected field.

Enter Process changes and return to menu.

Esc Discard changes and return to menu.

Tips and Suggestions

On AT-style models, changing the date and/or time with the standard DOS commands does not affect the internal clock; you have to use a special program on the diagnostics disk to do that. NCC, however, does change the internal clock time.

Unfortunately, some models have a bug in their BIOS that prevents NCC from successfully setting the internal time. On these machines you must use the diagnostics disk.

Note that DOS does not support dates prior to January 1, 1980. If you set the year field to "79", for example, DOS will interpret it as 2079. We'll have to wait and see what this implies for the year 2080 AD.

NCD–Norton Change Directory

Purpose

From the command line:
Change to a directory without specifying the entire pathname.

Interactive mode:
Display a full-screen scrollable diagram of the directory tree, with visual *make*, *change*, *rename*, and *remove directory* functions.

Command Format

NCD MD *dirname*

or

NCD RD *dirname*

or

NCD [*end-point directory name*] [/R] [/N]

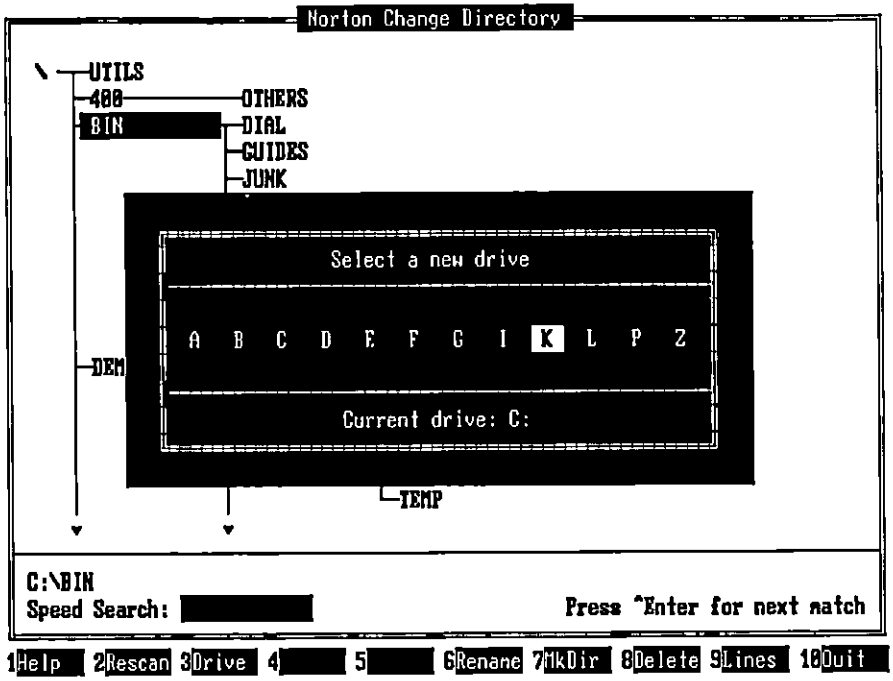
Switches

/R — Rescan disk directory

/N — Do not write TREEINFO.NCD file

Description

Norton Change Directory provides two superior methods for navigating in and managing large or complex directory structures. When used without the optional end-point directory name, NCD displays the directory of an entire disk graphically. You can use cursor keys to scroll and move through your directory tree. You can make, rename, remove, or change directories anywhere in the tree simply by pointing to the desired location and pressing a single key.



Norton Change Directory, Graphical Interface

NOTE: The first time you run NCD, the program scans the disk to create a file of the directory structure. Thereafter, whenever you run NCD, it uses that file, TREEINFO.NCD, to determine the directory structure. Do not be put off by the delay the first time you use NCD; you'll find that in subsequent executions, NCD changes directories virtually as fast as the DOS CD command–faster, in fact, because you need to type less. See below for a way to force NCD to recreate the directory structure (necessary only when you create or remove directories with the old DOS MD or CD command, rather than with NCD).

The MD and RD Commands

The MD and RD commands allow you to make and remove directories. To create a directory named \progs\nu, for example, using the Make Directory option (NCD MD) type:

```
NCD MD \progs\nu
```

The same rules that apply for specifying directory names in the DOS MD and RD commands apply with NCD MD and NCD RD (for example, a directory must be empty before it can be deleted).

NCD for Quick Directory Changes

When used with an end-point directory name–notice that's directory *name*, not directory *path*–NCD changes immediately to the specified directory. You needn't type the full pathname; NCD will look up the full pathname for you. For example, suppose you had a directory with the full pathname:

```
\PROGS\NORTON\NU-DEMOS
```

If you were in a directory called \wp\letters\sonnyboy and wanted to use the DOS CD command to change to NU-DEMOS, you would have to type this command:

```
CD \PROGS\NORTON\NU-DEMOS
```

With NCD, rather than typing the full pathname, you could simply type the *end-point directory* you wanted to move to:

```
NCD NU-DEMOS
```

As a matter of fact, with NCD you don't even need to type the entire directory name; just type enough to uniquely specify the name. Continuing with the same example, if NU-DEMOS were the only directory name that started with the letter *N*, you would only need to type:

```
NCD N
```

You don't even have to type enough of the directory name to uniquely identify it. If you had two directories that started with *N*–for example NU-DEMOS and NU-PROGS–then the first time you typed:

```
NCD N
```

you would change to the first directory that started with *N* (which would be NU-DEMOS if you had sorted your directories by name). If that's not what you wanted, just type:

```
NCD N
```

a second time (or press the F3 key, and let DOS retype it for you). When you specify a partial directory name that can refer to more than one directory, NCD cycles through all the possibilities as you repeat the command.

Alternatively, you could simply type enough of the directory name to be unique; in our example here, typing:

```
NCD NU-P
```

would move you directly to NU-PROGS, no matter what directory you started in.

Using NCD, you can change *from* any directory, *to* any directory, simply by typing the end-point directory name.

NCD for Graphic Directory Management

NCD is really two directory management tools in one. When you type NCD followed by a directory name (or a partial directory name), NCD is a "Quick Change" directory command, as described above. When you type NCD with no arguments, the program becomes an interactive graphical directory-management tool.

Type NCD with no parameters to display the directory structure graphically. When the directory is first displayed, the selection bar appears on the current directory (the one you were in when you ran NCD).

You can move the directory selection bar with the cursor keys: the up and down and left and right arrows all move the directory selection bar in the expected directions. Use

PgUp and PgDn to scroll the display up or down a page at a time. The Home key scrolls to the beginning of the display, the End key to the end.

You may search for a directory beginning with a specific letter or letters simply by typing them. Letters entered appear in the speed search dialog box at the bottom left of the screen. If there is a directory matching the letter(s) you've entered, the highlight moves to it. Otherwise, the highlight stays put and the letters typed do not appear in the speed search dialog box. You may hold down the Ctrl key and press Enter to find the next match.

Other functions in NCD are handled via function keys.

You can change to a different directory by simply moving the selection bar to it, and pressing the Enter key. Doing that both changes you to the new directory and quits NCD.

Function Keys in NCD

F1 Press F1 to access a screenful of helpful information.

F2 Press F2 to rescan the drive and update the directory tree and the TREEINFO.NCD file. (This is equivalent to the /R switch.)

F3 Press F3 to change drives. A dialog box appears. Make your choice of drives using the arrows keys and press Enter. Press Esc to dismiss the dialog box without changing drives.

F6 Press F6 to rename a directory. Highlight the directory you want to rename, press F6, and type the new name.

F7 You can create a new directory under the one highlighted by the selection bar: type F7, for Make directory, followed by the new directory name.

F8 You can delete the directory under the directory selection bar: Just press F8, for Delete directory (a directory must be empty before it can be deleted.)

F9 Press F9 to change the number of lines on the display. Move the highlight to the desired number of lines using the left or right arrow key. Press Enter to make the change,

Esc to leave without changing anything. This option is only available on EGA and VGA-equipped machines.

F10 No matter what directory name the selection bar is on, you can always exit NCD quickly, without changing directories, by pressing F10 or Esc.

The /R Switch Rescans the Directory Tree

The first time you run NCD, the program creates a file called TREEINFO.NCD that contains a listing of all the directories on your disk. In subsequent executions, rather than scanning the entire disk, NCD saves time by referring to TREEINFO.NCD.

As long as you create and delete all your directories with NCD–either in full-screen mode or by using NCD with the MD (Make Directory) option or the RD (Remove Directory) option–the program will always have current directory-tree information.

If you use the DOS MD and RD commands, you should update the TREEINFO.NCD file by running NCD with the /R switch, to Rescan the directory.

Use /N with Write-Protected Disks

If you're using NCD to change directories on a write-protected diskette, you'll want to include the /N (Nowrite) switch. That will turn off NCD's desire to update the TREEINFO.NCD file on your write-protected diskette and spare you the pain of responding to an error message.

Tips and Suggestions

NCD, with its directory Quick Change feature, is fast becoming one of my favorite Utilities. After realizing how useful NCD is, I renamed the directories I use regularly with unique names, so I can move instantly to any directory with a minimum of typing.

If you come to depend as heavily on NCD as I do, you may want to put the program (or a copy of it) into the directory that's listed first in your path. That way when you run it, DOS will find it right away, and NCD will seem virtually as fast as DOS's own CD (Change Directory) command.

You must be running DOS 3.0 or later to use the rename function.

Examples

If you want to	Type this command
View a graphic tree of the directory structure	`NCD`
Use the cursor keys to move around the directory tree.	
Change, rename, delete, and create directories graphically	`NCD`
Change directories by highlighting the desired directory with the directory selection bar and pressing Enter. Rename, Make, or Delete directories with the function key commands F6, F7, and F8.	
Make the directory \newdir from the command line.	`NCD MD \newdir`
If you use MD (Make Directory) and RD (Remove Directory) with NCD, the TREEINFO.NCD file will be automatically updated, and you won't have to wait while NCD rescans the disk.	
Change directories to \PROGS\NORTON\NU-DEMO	`NCD NU-DEMO`
With NCD, you only need to specify the end-point directory, not the whole pathname.	
Change to \PROGS\NORTON\NU-DEMO with a minimum of typing	`NCD N`
You don't even need to type the entire name. NCD will change to the first directory that matches the characters you've typed.	

From \PROGS\NORTON\NU-DEMO, change to \PROGS\NORTON\NU-DOCS **NCD N**

If you're already in a directory that matches the partial directory name, NCD will change to the next matching directory. Successively typing NCD, followed by the partial directory name, causes the program to cycle through all the directories matching the partial directory name you've typed.

From any directory, change immediately to \PROGS\NORTON\NU-DOCS **NCD NU-DOC**

To change directly to any directory, type enough of the directory name to uniquely identify it.

Change to the root directory **NCD **

I almost never use the DOS directory commands any more.

I created the directory \NOTHER with the DOS MD command, and now I want to move to it with NCD. **NCD NOTHER /R**

If you use the DOS commands to alter your directory structure, you have to let NCD know so it can update its TREEINFO.NCD file. Use the /R switch to tell NCD to rescan the disk's directory structure. If you typed NCD MD \NOTHER, NCD wouldn't have had to rescan the disk directory.

NDD—Norton Disk Doctor

Purpose Automatically find and correct any physical or logical errors on floppy or hard disks.

Command Format

NDD [*d:*] [*d:*]... [*/QUICK*] [*/COMPLETE*]

Switches

d: Drive to test. You may optionally specify one or multiple drives for testing by listing each drive letter, followed by a space.

/QUICK
Omit the test for bad data cylinders on the disk.

/COMPLETE
Include the test for bad data cylinders

Description Norton Disk Doctor automatically diagnoses and corrects a variety of problems that can occur on both hard and floppy disks. NDD runs a number of sophisticated tests, including tests of the integrity of all copies of the File Allocation table; a number of tests designed to probe the integrity of the boot record; and a test of the entire disk directory structure. This is just a summary of NDD's actual workings, however; in total, over a hundred individual tests are performed.

NDD—Command Line Mode. NDD can be run either in command line mode, or interactively. To run NDD in command line mode, type the program name, one or more drive letters, and either */QUICK* or */COMPLETE*.

Perform Data Sector Testing (/COMPLETE)

Specify the */COMPLETE* switch to have NDD test each data sector individually. If NDD finds a bad sector, it will

mark the sector as bad, after first attempting to move the sector's data to a known good sector. NDD will tell you what file owned the bad sector, so you can check it afterwards.

Skip Data Sector Testing (/QUICK)

The complete data sector test is a time consuming process. You can skip the sector test by specifying the */QUICK* switch. If you run NDD every day at startup from your AUTOEXEC.BAT file, you will probably wish to use this switch. For example, to run NDD on the C: drive, and skip the test for bad sectors, you could enter the command:

```
NDD c: /quick
```

in your AUTOEXEC.BAT file.

Running NDD Interactively

To run NDD interactively, type

```
NDD
```

with no parameters or switches.

You will be presented with a menu of three choices: Diagnose Disk, Common Solutions, and Exit Disk Doctor.

Diagnose Disk

This is the heart of NDD. Choosing this option causes NDD to automatically diagnose and correct a number of things that can go wrong with hard and floppy disks.

After selecting this option, you will first be presented with a list of active disks; use the up and down arrows to select the disk you wish to diagnose, and press the Enter key.

NDD will now perform a complete disk diagnosis on each of the three main areas of the disk. If any errors are found during the analysis, you will be informed of the problem, and asked if you wish to correct it. If you elect to correct the problem, NDD will automatically fix the problem and continue with the diagnosis.

Data Sector Test Option
After completing the diagnosis, you will be given the option of performing an exhaustive sector test. (This is the same test performed in the command line mode when the */COMPLETE* switch is specified.) This test takes a while, which is why you are given the option of skipping it. If you decide to run the test, you will be shown a map displaying the progress of the test. If a bad data sector is found, NDD will report the error. If the sector is not currently being used, it will be marked as bad. If it is being used, NDD will first move as much of the file owning the bad sectors as possible to known good locations before marking the sector as bad. You will be told the filename that was moved; you should check the file afterwards.

At the conclusion of the diagnosis, Norton Disk Doctor will present a summary of test results.

Common Solutions

Make a Disk Bootable
This option will take whatever steps are necessary to make any disk bootable, no matter what is currently occupying the system area. After selecting this option, you will presented with a menu of active disks; use the up and down arrows to select the disk you wish to make bootable, then press the Enter key to start the operation.

When necessary (on a hard disk with no bootable partition), this option, unlike DOS, will actually modify the partition table to make the specified disk bootable. It will also copy DOS's COMMAND.COM file to the newly bootable disk, which DOS itself does not do.

If you're familiar with DOS's SYS command, you've probably received the error message, "No room for system files." This is the situation that this option solves: NDD will *make* room.

Revive a Defective Diskette
This option revives a defective diskette by laying down new physical format information; unlike a DOS format, however, you will still have access to the original data on the disk after formatting.

You might select this operation manually after receiving a Read error message from DOS, for example. However, if you select the *Diagnose Disk* option, NDD will

automatically attempt this same process if it encounters problems.

Recover from DOS's Recover
DOS's RECOVER program does not do what most people assume: after using the program on a damaged disk, you will find that all of your files, no matter where they were originally, are now in the root directory, with cryptic, machine generated names. (RECOVER does not actually recover, or UnErase, files.) This program undoes the mess created by RECOVER, restoring your disk to the state it was in before you ran DOS RECOVER.

Background Info

Norton Disk Doctor is our attempt to distill our technical expertise with disks into a form you can use without having to be an expert yourself. We expect it will be able to handle the majority of the problems that used to require a call to our tech support people.

Examples

If you want to	Type this command
Run NDD in interactive mode	`NDD`

Omitting any switches causes NDD to run in interactive mode.

Test the C: and D: drives at startup `NDD C: D: /QUICK`

You can put this command in your AUTOEXEC.BAT to ensure the continuing health of your hard disks. The */QUICK* switch causes the time-consuming sector tests to be omitted.

NI–The Norton Integrator

Purpose

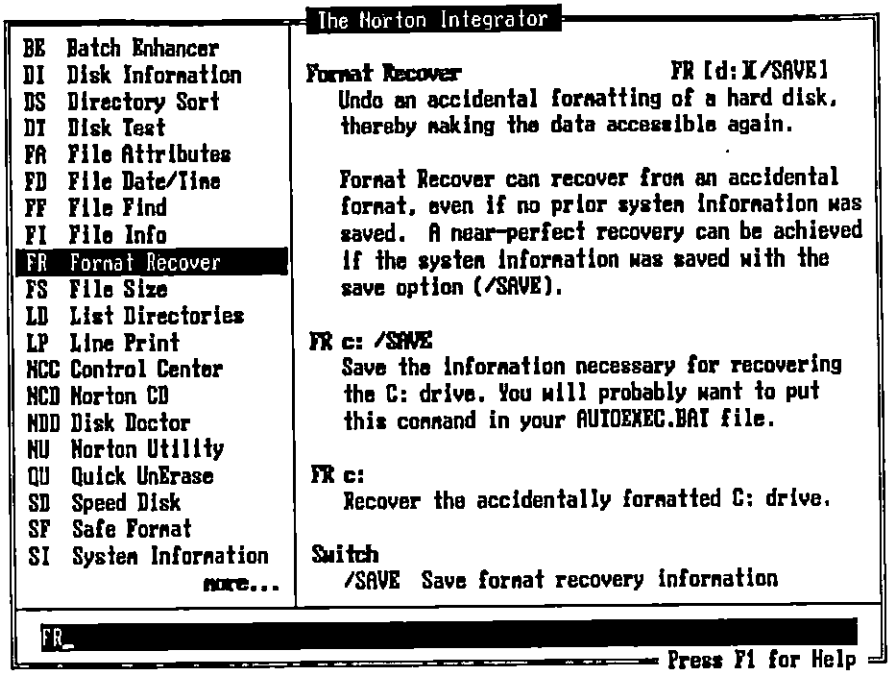
Provide an integrated environment that organizes all the Norton Utilities, with instant "point and shoot" execution of any Utility, context-sensitive help screens, and Speed Search.

Command Format

NI

Description

The Norton Integrator offers a convenient, quick, and easy-to-use way to run any of the Norton Utilities. To the user new to the Utilities, the Integrator offers all the advantages of "point and shoot" operation: You don't have to remember the names and uses of each separate Utility, because the Integrator displays a list of all the Utilities.



The Norton Integrator

As the command selection bar (the inverse video bar at the left of the screen) is moved down the list of Utilities, help screens appropriate for each Utility are displayed. When you find the Utility you want, simply press the Enter key to run it. The Integrator will run the Utility; when the Utility quits, control is returned to the Integrator, and you can run another Utility. To quit the Integrator, press the Esc key.

For the advanced user, the Integrator offers a quick summary of the format of each command, along with a convenient listing of the switches available with each command. As the selection bar is moved through the list of Utilities, the name of the Utility under the bar is automatically written to the command line at the bottom of the screen. You can add parameters to any of the commands before executing them: Just start typing. With both the command format and a list of switches on screen as you type, it becomes very easy to enter even long or complex

commands. When you have entered all the parameters, press Enter to execute the command.

Speed Search. You can enter the Utility name directly, using *Speed Search*. To take advantage of Speed Search, press the Tab key, then start typing the command. As you type, the Integrator will move the selection bar to the first Utility that matches the characters typed so far. When you get to the Utility you want, press the spacebar, and then type any parameters. Press the Enter key to execute the command. If there are no parameters, press the Enter key to execute the command as soon as the highlight reaches the command you want.

Editing keys. You can edit the command line with the cursor keys. You can also use WordStar-compatible commands. Here is a list of the available editing keys:

Ctrl-F	Cursor right one word
Ctrl-Rightarrow	Cursor right one word
Ctrl-A	Cursor left one word
Ctrl-Leftarrow	Cursor left one word
Ctrl-Home	Cursor to beginning of line
Ctrl-End	Cursor to end of line
Right-arrow	Cursor right one character
Ctrl-D	Cursor right one character
Left-arrow	Cursor left one character
Ctrl-S	Cursor left one character
Backspace	Delete character left
Del	Delete character under cursor
Ctrl-G	Delete character under cursor
Ctrl-T	Delete word right
Ctrl-W	Delete word left
Ctrl-Y	Delete parameters

Tab	Delete entire line and enter Speed Search

Note that deleting the line *does not* delete the command name at the beginning of the line. If you want to delete the command name and type in the whole line, simply press the Tab key to activate Speed Search. Note also that pressing Home or End moves the *command selection bar* to the beginning or end of the parameter list; if you want to move the command-line cursor, you must use Ctrl-Home or Ctrl-End.

History of commands. The Integrator keeps a list of previously executed commands. You can cycle through the list by pressing Ctrl-E (to move backward) or Ctrl-X (to move forward).

Background Info

The Integrator calls DOS to run the Utilities. Therefore, you should include the directory that contains the Utilities in the DOS path, so DOS can find them. Alternatively, you can keep the Integrator and all the other Utilities together in a common directory.

The Integrator summarizes the command format using the same notation as is found in the manual. Briefly, the only important symbols whose purpose may not be immediately apparent are square brackets:

[which enclose optional parameters]

Square brackets indicate that the enclosed item is optional: You may specify or omit it, as desired.

Tips and Suggestions

I think you will find the Integrator takes the pain out of learning to use the Utilities. Even once you are familiar with the Utilities, you will probably find that the Integrator's quick listing of switches still comes in handy from time to time.

One way to get the most out of the Utilities is to use them from batch files. You may find it helpful to "construct" and test your commands with the Integrator; once you're happy with them, you can transfer them to a batch file.

Examples

If you want to	Type this command
Run the Norton Integrator	**NI**
There are no switches or parameters (other than the screen driver switches).	
Run the Norton Utilities Main Program	**NI**
You can run *any* of the Norton Utilities from the Integrator, including the main NU program.	

NU–Norton Utilities Main Program

Purpose Explore and edit any area of a disk, using various data formats as appropriate, including hexadecimal, text, directory, FAT, and Partition Table. Use sophisticated data-recovery capabilities to UnErase deleted files and recover lost data.

Command Format

NU [*filespec*][*switches*]

Switches

/D*n* Screen driver options:

n=0 The default, for IBM PCs and 100% compatibles.

n=1 Use with BIOS-compatible machines.

/BW (Alt-F1)
Use when running a monochrome composite monitor from a CGA card. May be toggled within NU via Alt-F1.

/EBCDIC (Alt-F5)
Interpret characters according to the EBCDIC encoding standard (used on IBM mainframes). Within NU, press Alt-F5 to toggle this option on and off.

/NOSNOW
Provides deglitching on older CGA display adapters. If your screen flickers annoyingly, use this switch to correct the problem.

/X:*drives* Exclude *drives* from absolute sector processing. If you experience difficulty activating the absolute sector mode of NU, use this switch to exclude allocated but non-existent drives from absolute sector processing. (For example, you must use this switch to activate absolute sector processing in Zenith DOS; type NU/X:DEF to exclude drives D:, E:,

and F, since Zenith DOS allocates these drives even if they don't exist.)

/M Maintenance mode; bypasses the DOS logical organization, which you may need to do when working with badly damaged disks.

/P (Alt-F2)
Display Printable characters only–suppress the display of IBM graphics characters. Useful when sending a "screen shot" to your printer. May be toggled within NU by means of Alt-F2.

/WS (Alt-F6)
Toggle Wordstar mode on (7 bits per character) or off (8 bits per character). When on, characters in the IBM PC extended character set will not be displayed.

General Description

The Norton Utilities Main Program offers an extensive set of capabilities for exploring disks, displaying and editing disk data in a variety of formats, reporting technical information about disks and files, searching for lost data, and recovering lost data and erased files.

You can specify a filespec when starting NU. If an existing DOS file is specified, NU automatically enters the Explore Disk function and opens the editor on the file. If the file is an erased file (type a ? as the first character of the filename to indicate an erased file), NU enters the UnErase function, with the specified file already selected.

Maintenance Mode As the Norton Utilities starts up, it reads the directory structure of the entire disk. If your disk is badly damaged, it may not be possible to read all of the directory structure correctly, in which case NU will not start up. If this happens, you can force NU to omit the start-up directory scan by specifying the /M (maintenance) switch. When the maintenance switch is specified, you can work with clusters, sectors, and absolute sectors. You cannot work with files, or UnErase files, in maintenance mode.

Selecting Menu Choices

Functions of the Norton Utilities Main Program are accessed through menus. Menu choices can be selected in either of two ways:

- Use the Up-arrow and Down-arrow keys to move the selection bar (the reverse video highlight) to the desired menu choice, and press the Enter key to execute the command.
- Press a command's hot key to execute it immediately. (Each menu choice is displayed in lowercase letters, with the exception of a single letter which is both capitalized and highlighted. This visually distinct letter–usually the first letter of the command–is known as the *hot key*.)

You may use either method of command selection at any time.

Whenever it displays a new menu, The Norton Utilities Main Program anticipates your most likely response and moves the selection bar to that choice. Many times, this will enable you to run through a series of menus in the desired order simply by pressing the Enter key.

(Note: The main menu of the UnErase function (officially titled "Find Erased File's Data") is actually two separate menus displayed side by side. Move between the two menus by pressing the Tab key. This menu is fully described in the section on UnErasing, below.)

Help

Two kinds of help are available to you in the Norton Utilities Main Program:

- As the selection bar is moved from one menu choice to the next, a single line of help information (directly beneath the menu) displays a brief description of the highlighted command. If you need a refresher about the purpose of a menu choice, just use the arrow keys to move the selection bar to the that choice and read the description in the help line.
- For more detailed help, press the F1 Help key. Context-sensitive help is available at all times via the F1 Help key.

Organization of the Norton Utilities Main Program

The Norton Utilities Main Program consists of three principal functions:

- Disk Exploration
- UnErase
- Disk Information

Although these functions are logically independent, their capabilities are complementary and their interfaces are virtually identical, so they have been integrated into a single program.

The Main Menu

Any of the three principal functions–Exploration, UnErasing, or Information–may be chosen from the Main Menu, the first screen you see when you start NU. Once you've chosen one of the three main functions from this screen, you can later return to choose another by backing out of your current menu with the Esc key; each time you press Esc, you back up one menu level.

Quitting NU

Using the Esc key to back out of the current menu also works from within the Main Menu; that is, pressing Esc from the Main Menu takes you back to DOS. You can also press the F10 ExitNU key from any submenu to quit NU and return to DOS. If you have unfinished work in progress (a partially recovered and not-yet-saved erased file, for example), NU will issue a warning and prompt for confirmation before it exits.

Note that the functions of Esc, F1, and F10 never change:

Esc	Back up to the previous menu
F1	Display context-sensitive help
F10	Quit NU and return to DOS

NU–Disk Information

From the Main Menu, choose Disk information to display a map of disk usage or to review a report on the primary characteristics of your disk drive.

Disk Map [D M]

To display a map of disk usage, from the Main Menu

- Press D, Disk information.
- Press M, Map disk.

The map presents a visual display of clusters in use by files, bad clusters, and free clusters.

You can get a rough idea of the degree of fragmentation of your disk from the disk map: "Islands" of free space surrounded by allocated clusters are an indication of fragmentation. To determine the fragmentation of a particular file, execute the following command sequence, starting from the Main Menu: Explore disk–Choose item–File–(file name)–Information on item.

DOS allocates disk space in units called *clusters*. The size of a cluster varies from disk to disk, but all clusters on a given disk are the same size. A *fragmented* file is one whose clusters are not contiguous. See the booklet *The Norton Disk Companion* for a complete discussion of clusters, fragmentation, and other related concepts.

Technical Information [D T]

To display a technical report on the major characteristics of your disk drive, from the Main Menu:

- Press D, Disk information.
- Press T, Technical information.

The report includes information on the drive's capacity, free space, and logical organization (including sector size,

sectors per track, cluster and root directory size, and related items).

Getting Disk Information for Another Disk

To view disk information for a disk other than the default drive, from the Main Menu:

- Press E, Explore disk.
- Press C, Choose item.
- Press C, Change drive.
- Press the desired drive letter.
- Press the Esc key twice, to return to the Main Menu.
- Press D, Disk Information.
- Press M for a disk Map, or T for Technical information.

NU–Explore Disk

Explore Disk, the first choice on the Main Menu, is the doorway to examining, searching, and editing any of the areas of your disk.

The Explore Disk function offers a variety of ways to examine your disk. For example, you can select a filename and look at data on a file-by-file basis; you can specify a range of clusters to examine and edit; you can look at single sectors; and you can even specify an absolute sector to work with, thereby circumventing DOS's sector-numbering scheme and gaining access to any and all sectors on the disk, including the master boot record.

Once you've decided what *type of item* (file, cluster, sector, or absolute sector) you want to work with, you can choose from a number of ways to *view* the item. You might wish to view a word processing file in *text* mode, for example. For a compressed database file, you might prefer hexadecimal format. You could view a directory in *directory* format, and you could examine *and edit* the File Allocation Table (FAT) by using the special *FAT editor*, or edit a directory with the help of the *directory editor*. This edition of the Norton Utilities also includes a *Partition Table editor* for those of you brave enough to tamper with the disk's most intimate parts.

Selecting an Item

The Norton Utilities Explore Disk command can find and work with a given piece of disk data in a variety of ways, depending on its context and intended use. These different "views" of data are not mutually exclusive: You could look at a piece of data, for example, by examining the *file* it is in, the disk *cluster* that contains it, or the *sector* that contains it. (In addition to specifying the sector via DOS's logical sector-numbering scheme, you can also specify an *absolute* sector.) The primary difference between these various views is in the way the data is addressed, or accessed: To find a file, you specify its name; to access a cluster, you indicate a cluster number or range; and to find a sector (or an absolute sector), you specify a sector number or range.

In general, your choice of viewing mode will depend on what you know about the data in question and what you want to do with it. For example, if you want to check a file for damage, you would naturally select File as the way to view your data; that way, all you would need to know is the file's name, not where the file's data is stored on the disk or in what order the clusters are strung together. On the other hand, if DT (Disk Test) had just reported a bad cluster, you might want to use Explore Disk to examine that cluster; you would then select Cluster as the way to view your data.

Because the program can access disk information by file, cluster, sector, or absolute sector, you must tell it which type you want to use. Thus the first thing you should do after choosing the Explore Disk function is select the type of item–file, sector, cluster, or absolute sector–you wish to explore. You do this from the Choose Item menu.

The Disk Information Menu

After you've chosen Explore disk from the Main Menu, NU moves to the Explore Disk menu, with the option

Choose item

already highlighted, since, as we've seen, that is usually the next thing you'll want to do.

Display of current selection. Information about your current selections is shown in the boxes at the bottom of the screen; right now, this information reflects NU's default guesses.

The box on left says:

```
Item type

Directory
```

The item type called "Directory" is simply a special type of a "File" item, so we know that from among File, cluster, sector, or absolute sector, NU has guessed we will want to work with Files. The name of the file is shown in the box at the far right:

```
File name

 Dir area
```

There's not really a file named Dir area; this is simply NU's shorthand way of letting us know it has guessed we'll want to work with the current directory area.

The other two selections shown in the information boxes at the bottom of the screen are the drive and the directory name.

Information boxes showing the current selections are displayed at the bottom of most screens, so you can easily keep track of what you're doing. The labels and contents of the boxes will change as you change selections, of course; if you select cLuster, the item type box will change to "Cluster," the Directory name box will change to "Cluster Number," and the File name box will disappear.

If the default choices are not the ones you want, the next thing you should do before proceeding further is select

```
Choose item
```

from the Explore Disk menu.

Choose Item [E C]

Selecting Choose item moves you to the Choose item submenu. From this menu, you can make up to three different choices. You can:

- Change the drive, by pressing C, Change drive.
- Change the directory, by pressing D, change Directory.
- Choose File, cLuster, Sector, or Absolute Sector.

To change the drive, from the Choose item submenu:

```
Press C, Change drive
```

Press the new drive letter or use the arrow keys to move the highlight to the new drive, and press Enter. You will be returned to the Choose Item menu, where you can continue your selections.

To change the directory, from the Choose item submenu:

```
Press D, change Directory
```

Use the up, down, left and right cursor keys to move the highlight around the graphic tree-structured directory display. When the highlight reaches the directory you want, press the Enter key. You will be returned to the Choose Item menu, where you can continue your selections.

To select between File, cLuster, Sector, or Absolute Sector from the Choose Item menu:

Press F, L, S, or A to choose item type File, cLuster, Sector, or Absolute Sector.

Selecting Files [E C F]

From the Choose Item menu, Press F, File, to move to the Select File or Sub-directory menu. This menu lists all files and subdirectories in the current directory. All subdirectories are listed first, in capital letters, followed by all files, in lower case.

The Boot record, FAT, and Directory areas. Several areas of the disk that are each a logical entity–the boot area, the FAT, and the root directory–are not actually DOS files. For convenience, however, NU lets you choose any of these areas as a single entity, by selecting it *as if* it were a file. To select any of these "pseudo-files," first change to the root directory; from the Choose Item menu:

- press D (change Directory).
- press Home (to move the highlight to the first directory, the root).
- press Enter.
- Press F or Enter to select File.

The pseudo-files "Boot area," "FAT area," and "Root dir" will appear as the first three "files" in the list. Select any one by moving the highlight with the up and down cursor keys and pressing Enter. (Speed Search, described below, is not available here.)

Note the difference between *selecting* a directory name from the Select File or Sub-directory menu and *changing* the directory from the Choose Item menu. *Selecting* a directory name from the Select File or Sub-directory menu tells NU that you want to examine the directory file itself. That's quite different from *changing* the working directory from the Change Directory menu. When you change the directory, you are simply asking to change the list of files that is displayed in the Select File menu, rather than selecting the directory itself for examination.

There are two ways to select filenames in the Select File or Sub-directory menu:

- Use the cursor keys to move the highlight to the desired filename, and press the Enter key. Or
- Use Speed Search: Start typing the name you want; as you type, NU will move the selection bar to the

first name that matches the letters you've typed so far. When the bar reaches the filename you want, press Enter.

Speed Search is an especially quick and convenient way to choose a name from a long list; usually, you will need to type only two or three letters to get to the name you want. You can also type a couple or three letters to get close to the name, and then use the cursor keys to zero in on the exact one.

After you've chosen a filename (or subdirectory name), NU will return you to the Explore Disk menu.

Selecting Clusters [E C L]

From the Choose Item menu, Press L, cLuster, to select a single cluster or a range of clusters. The Select Cluster menu will appear. Valid cluster numbers will be shown at the top of the menu, followed by two response boxes for entering the starting and ending cluster number. Enter the cluster number for the start of the desired range in the "Starting cluster" box, press Enter (or Tab) to move to the second response box, type the cluster number for the end of the range, and press Enter again.

You can specify a cluster "range" that's only a single cluster in length by entering the cluster number in the "Starting cluster" box and pressing the Enter key twice.

As it does in other contexts, NU will supply default cluster ranges whenever possible. You can accept the defaults by pressing the Enter key, delete the default and type a new range, type over the default, or edit the default by pressing one or more cursor keys before typing a number key.

If the cursor is in the "Ending cluster" box and you wish to edit the number in the "Starting cluster" box, press Tab to switch boxes. To exit from the menu, press Enter with the cursor in the "Ending cluster" box.

If you're not sure of the exact range of clusters you wish to view, enter a starting cluster number and leave the ending cluster number blank. When you examine the cluster, NU will open the editor on the selected cluster and let you page up and down to previous and subsequent clusters. If you

enter both a starting and ending cluster number, NU will limit your paging to clusters within the specified range.

Selecting Sectors [E C S]

Press S, Sector, to select a single sector or a range of sectors. The Select Sector menu will appear. The range of valid sectors will be shown at the top of the menu. Toward the bottom of the menu you will find a listing of the sector numbers used by the boot record, FAT, the root directory, and the data area of the disk. Sectors are selected in the same manner as clusters; see the section, "Selecting clusters," immediately above.

Selecting Absolute Sectors [E C A]

You can also select Absolute sector from the Choose Item menu. When you select Absolute sector, you avoid DOS's sector numbering scheme, using instead the low-level (BIOS) sector-numbering scheme that identifies physical sectors according to their side, cylinder, and sector number (within the cylinder).

To select Absolute sector from the Choose Item menu, press A, Absolute sector.

Next, choose the drive on which you want to examine physical sectors. You can either type the drive letter or move the highlight with the cursor keys and press the Enter key. Note that this separate drive-selection menu appears only when you are selecting Absolute sectors. (To change the drive when selecting File, cLuster, or Sector, type C, Change drive, from the Choose Item menu.)

If you have a single hard disk divided into multiple volumes (say C: and D:), it's immaterial which drive letter you select. Both letters refer to the same physical drive, and you will be referring to sectors by their physical location. Therefore, specifying, side 0, cylinder 0, sector 1 would access the same sector–the very first sector, the Partition Table–of the drive, whether the drive itself is specified as C: or D:.

After selecting the drive, you will be presented with a menu containing four response boxes. Enter into these boxes, respectively, the side, cylinder, starting sector number, and

total number of sectors you wish to view. You can edit the values in these boxes in the same manner as the response boxes in the Select Cluster menu:

- Delete the old value and enter a new value.
- Type over the old value.
- Edit the old value by pressing a cursor key before you type any number keys.
- Move to the next response box by pressing the Enter key. Press Enter while the cursor is in the last box to exit the menu.
- Move to the next response box by pressing the Tab key. This is especially useful when you want to edit another response box, rather than leaving the menu. Pressing the Tab key while in the last response box will let you edit the first box.

For all response boxes, the range of legal values is listed next to the box. The default values that NU supplies are Side 0, Cylinder 0, Sector 1, Number of Sectors 1. This is the first sector of the drive; on hard disks it always corresponds to the *Partition Table*.

You can use the Partition Table editor to view and edit the Partition Table. To do this, select Absolute sector from the Choose Item menu, then accept NU's default values, which correspond to the first physical sector, the Partition Table. This is, as a matter of fact, the only way to enter the Partition Table editor. See the section on FAT, directory, and Partition Table editors for a complete description of the Partition Table editor.

WARNING: Do not write absolute sectors unless you absolutely know what you are doing. If you make an error while editing one of the DOS system areas, DOS may no longer be able to access your disk. Before you write absolute sectors, particularly to DOS's own areas of the disk, it's a good idea to back up the entire disk.

Operations on Item

Once you have selected an item from the Choose Item menu, you will be automatically returned to the Explore Disk menu. (Changing the drive or directory from the Choose Item menu is not considered *selecting* an item; after changing the drive or directory, you automatically return to the Choose Item menu. If the currently chosen item is the one you want, simply press the Esc key to move up to the Explore Disk menu.) From the Explore Disk menu, you can perform one of four operations on the currently selected item:

- Get information on the item.
- View and edit the item.
- Write the item elsewhere (copy the item to the same or another disk).
- Search the item for particular data.

In addition to searching the selected item, choosing Search item or disk gives you the option of searching the entire disk, the active data area (i.e., searching through all files), or the erased file space.

Information on Item [E I]

To view information on a particular item, make sure you have first selected the item (pick Choose item from the Explore Disk menu), then press I, Information on item, in the Explore Disk menu. The information presented varies, depending upon the type of item selected:

- *For a file or directory*, a map showing the allocation of clusters belonging to the file will be displayed. The name, date and time of creation (or last modification), size, and attributes of the file will also be listed, as well as the starting cluster number of the file and the total number of clusters. If you are viewing information in a directory, press the left or right cursor key to view information about the previous and next directory entries, respectively.
- *For a cluster*, the sectors comprising the cluster and the name of the file to which the cluster is allocated (if any) will be listed.

- *For a sector*, the cluster number of which the sector is a part will be listed, along with a table outlining sector usage for the disk.
- *For an absolute sector*, the DOS sector and cluster number will be displayed, if the sector is a DOS sector.

After viewing information on the selected item, press Esc to return to the Explore Disk menu, Left-arrow to see the previous entry, Right-arrow to see the following entry, or Enter to select the current item.

Edit/Display Item [E E]

Press E, Edit/display item, from the Explore Disk menu, to view and/or edit the currently selected item. The format that NU will initially use to display the data depends on both the item selected and its contents:

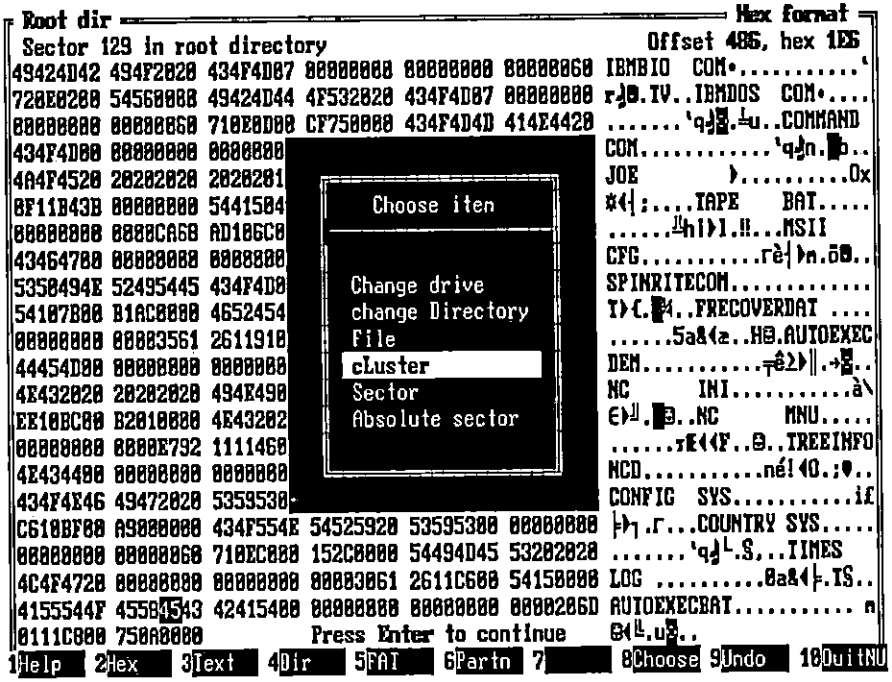
- For directories, the display will initially be in *directory* format.
- If you have selected the pseudo-file FAT or any sector within the FAT, the FAT editor will appear. These are the only two ways to bring up the FAT editor.
- If you have selected the absolute sector 0, 0, 1 (side, cylinder, sector number), and the selected disk is a hard disk, the Partition Table editor will appear.
- For everything else (files, clusters, sectors, and absolute sectors), data will appear in *text* mode if NU determines that the data is probably text.
- Otherwise data will appear in *hexadecimal* format.

Changing Display Formats

No matter what display format NU initially presents your data in, you are not locked in to that format. In all formats, at the bottom of the display you will see a menu bar showing which function key you should press to switch to other formats. For example, if you choose a file that's actually a directory, the initial format would be directory format. You could press F2 to view the same data in hex format, F3 to switch to text format, or F4 to return to directory format.

You will also see labels for F5 and F6, which switch to the FAT and Partition Table editors, respectively. The F5 function key will switch you to the FAT editor *only if* the current sector is part of the FAT (you may page to a sector within the FAT). The F6 Partition Table editor key will switch you back to the Partition Table editor.

The Choose command: Press F8 to bring up a window in which you may change the currently selected item without leaving the Edit/display item menu. It works the same as the Choose Item command in the Explore Disk menu.



Choose command in Edit/display item menu

Paging through data. In any of the display formats, press PgUp or PgDn to switch the display to the previous or next screenful of data, or the Home or End keys to display the first or last screenful. As you page through the data, status lines at the top of the screen display the name of the item you are viewing, as well as your location within the item. At times, as you page through the data, it may appear

that nothing is happening–the screen display doesn't change. This occurs when a subsequent screenful contains exactly the same data as the previous screenful. In most cases, this just means you've paged past the end of actual data–something a standard word processor, for example, doesn't allow you to do. You can verify that you are in fact paging through the data by seeing that your location within the item (as shown in the status line) is changing.

Editing Data

There are four editable formats: hex, directory, FAT, and Partition Table. The text format is not editable; if you wish to edit straight text, switch to hex format, and edit in the text window.

The Hex Editor

The hex format is the main format for editing. If the data you have selected is not part of a directory, the FAT, or the Partition Table, and if NU determines that it contains non-text characters, pressing E, Edit/display, automatically puts you in hex format. (If you want another format, simply press the appropriate function key.)

The status lines. The selected item–filename, cluster, sector, absolute sector, range of clusters, or range of sectors–is always shown in the top left border of the screen. (This is the same information shown in the "Item selected" boxes at the bottom of menus.) The cluster currently being viewed and the sector numbers within the cluster are displayed directly under the selected item. The offset within the item is displayed at the top right of the screen, directly beneath the border.

Hex and ASCII displays. Hex format is actually a dual-format display: The data is shown in hex at the left of the display, and its ASCII equivalent (or EBCDIC, if you chose that switch when you ran NU) is displayed at the right. Hex bytes that do not correspond to displayable ASCII characters are shown in the ASCII window as dots.

There are dual tracking cursors, one in the hex window and a second on the corresponding character in the text window, to indicate the edit position. The cursors "track," but since each two bytes in the hex window represents a

single ASCII character, for each two positions the hex cursor moves, the ASCII cursor moves only one.

Editing data. The active cursor blinks; the inactive cursor is solid. If the active cursor is in the hex window, you can edit data by entering hex values–any of the numerals 0 through 9 and letters A through F (capitals or lower case). If the active cursor is in the text window, you edit data by entering any ASCII character. You can move the active cursor from one window to the other by pressing Tab.

You edit data by *overtyping*, never by inserting. As you overtype, the newly entered data is **highlighted**, so you can see at a glance the data you've altered.

The Undo command. You can *Undo* any edit (i.e., restore the original data), by *backspacing* over the changed data or by pressing the F9 Undo key. Both keys operate the same when the cursor is in the text window; when you're in the hex window, press F9 to restore the *entire* previous byte to its original value; press the Backspace key to restore the previous hex *digit* (half-byte, or nibble) to its original value.

Navigating. Use the cursor keys to move the editing cursor through the data. (Remember you can move the active cursor from one window to the other by pressing the Tab key.) The arrow keys move the cursor left, right, up, or down, a character or a line at a time. The Home and End keys move the cursor to the beginning or end of the selected item. PgUp and PgDn move to the next screenful of information.

If the selected item is either a file or a range (cluster or sector), you cannot page or cursor your way beyond the beginning or end of the file or range. If the selected item is a single cluster or sector, NU will open the editor on the selected cluster or sector but will allow you to PgUp or PgDn to prior and subsequent clusters or sectors.

Saving/discarding changes. When you have finished viewing and editing your data, press Enter or Esc to exit the editor.

At this point, if you have made changes to the data, you will be given a chance to review the changes, discard them altogether, or write the changed data back to the disk.

Reviewing the changes simply returns you to the editor, as if you had never left.

After writing (or discarding) the changes, you will be returned to the Explore Disk menu.

The Directory Editor

The Norton Utilities Advanced Edition includes a directory editor, which offers a convenient way to directly edit any entry of any directory. To edit a directory with the directory editor, you select the directory in the same way you would select any other file. First select the directory in which the subdirectory you want to view is located:

- Press E, Explore disk.
- Press C, Choose item.
- Press D, change Directory.
- Move the highlight to the *parent* of the directory you wish to edit, and press the Enter key. If you want to edit the root directory (which has no parent), choose the root directory itself.
- Press F, File.
- Select the directory you wish to view, then press the Enter key.
- Press E, Edit/display item.

NU will automatically display the directory in directory format.

You can edit any of the fields in the directory:

- Edit a directory field by typing in the new value. NU will not let you enter an invalid value (a date of 40/40/00, for example).
- Move between directory fields by pressing the Tab and Backtab (Shift-Tab) keys. Move between lines by pressing the up and down cursor keys. Move within a field by pressing the left and right cursor keys.
- You do not need to type values into any of the "Attributes" fields; simply toggle an attribute on and off by pressing the space bar.

- At any time, you can press F2 or F3, to switch to viewing in hex or text formats, respectively, and you can press F4 to return to directory format. Changes made in one editing format will be preserved when you switch formats. You cannot switch to the FAT or Partition Table editors while viewing a directory.
- When you are finished editing the directory, press the Enter key. You will be given the choice of Writing the changed data, Reviewing the changed data (i.e., returning to the directory editor with your changes intact), or Discarding the changes.

Warning: Be careful when editing a directory; if you make a mistake, DOS may not be able to access your file correctly. It is a good idea to back up all the files in the directory before doing any editing.

The FAT Editor

The Norton Utilities Advanced Edition includes a FAT editor, which provides a convenient way to edit any value in the FAT. There are two ways to view the FAT in the FAT editor:

- Choose the root directory of the disk, via the change Directory command of the Choose Item menu, then choose the pseudo-file FAT from the Choose Item menu.
- Choose the sectors corresponding to the FAT, using the Sector selection command on the Choose Item menu.

First method. To view the FAT with the first method, from the Main Menu:

- Press E, Explore disk.
- Press C, Choose item.
- Press D, change Directory.
- Press Home, to move the highlight to the root directory, and Enter, to choose it.
- Press F, File.

- Use the arrow keys to move the highlight to the pseudo-file FAT at beginning of the list of files, and press the Enter key.
- Press E, Edit/display item.

NU will display the FAT in the FAT editor.

Second method. To select the FAT for viewing via the second method, from the Main Menu:

- Press E, Explore disk.
- Press C, Choose item.
- Press S, Sector.
- Type in the beginning and ending sector numbers of the FAT (listed in the table at the bottom of the screen), and press the Enter key.
- Press E, Edit/display item.

Again, NU will display the FAT using the FAT editor.

Both methods of viewing the FAT take you to the same place.

Editing in the FAT. To edit values in the FAT:

- Use the Tab and Backtab (Shift-Tab) keys to move from one field to the next, and the up and down arrow cursor keys to move between lines.
- To change a FAT entry, move the cursor to the desired entry and type in the new number. NU will not let you enter an invalid value.
- Enter the <EOF> (end-of-file) value into a field by typing an E.
- Enter the <BAD> (bad cluster) value by typing a B.

You can also view the FAT using the hex (F2) or text (F3) format; to return to the FAT editor from either of these editors, press F5.

When you have finished editing, press the Enter key. You will be given the choice of Writing the changed data, Reviewing the data (i.e., returning to the FAT editor), or Discarding the data.

WARNING: Don't edit the FAT unless you know what you are doing. If you make a mistake, you may make it impossible for DOS to access your data correctly–or at all. **It's always a good idea to back up your disk before editing sensitive areas of the disk.**

The Partition Table Editor

The Norton Utilities Advanced Edition includes an integral Partition Table editor, with which you can edit the various parameters found in the Partition Table of a hard disk. The Partition Table is always found in the very first physical sector of a PC hard disk.

To edit the Partition Table of a hard disk using the Partition Table editor, from the Main Menu:

- Press E, Explore disk.
- Press C, Choose item.
- Press A, Absolute sector.
- Select the drive whose Partition Table you wish to edit, and press Enter.
- The Partition Table is always the single sector found at side 0, cylinder 0, sector 1. Since these are the default values in this menu, you can simply press the Enter key four times to accept the defaults.
- Press E, Edit/display item.

NU recognizes when you have selected the absolute sector that corresponds to the Partition Table, as you just did in the sequence above, and automatically displays the sector in Partition Table format.

The Partition Table editor gives you an easy way to edit all the major parameters of the Partition Table, including:

- The FAT size of each partition (i.e., a 12-bit or 16-bit FAT; see the booklet *The Norton Disk Companion* for a complete discussion).
- Whether a partition is bootable or not.

- The starting and ending location of each partition and the partition's length (the length can be derived from the starting and ending locations, or vice-versa).
- Relative sector (the starting location of the DOS partition).

To edit the Partition Table:

- Place the cursor in the field you wish to edit. Use the Up-arrow and Down-arrow keys to move between lines; use the Tab and Backtab (Shift-Tab) keys to move from field to field; use the left and right arrow keys to move within a field.
- Edit the "System" field by moving the cursor to that field and pressing the spacebar to cycle through the three possibilities: DOS-12, DOS-16, and ? (not DOS and therefore not known).
- Edit the "Boot" field by moving the cursor to that field and pressing the spacebar to toggle between Yes (bootable) and No (not a bootable partition).
- The remaining fields are all numeric. Move to any of the numeric fields and type a new legal value, using the number keys. NU will not let you type an invalid value into any of these fields.
- You can also edit the Partition Table with the hex editor, by pressing F2; press F6 to return to the Partition Table editor. NU will let you edit in directory mode also. From any of these modes, press F6 to return to editing with the Partition Table editor.
- When you have completed your editing, press the Enter key. You will be given the chance to Write your changes to disk, continue editing (press R, Review the changed data), or Discard the changes.

WARNING: Careless editing of the Partition Table is potentially very dangerous. In general, the proper way to make changes to the Partition Table is via the DOS FDISK utility. Do not make changes to the Partition Table unless you know what you are doing. It's always a good idea to back up your disk before writing to sensitive areas of the disk such as the Partition Table. If

you back up your hard disk prior to editing the Partition Table, make sure you back up in *image* mode, not in *file* mode; that should ensure that the Partition Table itself is backed up and restorable. Like several of the other facilities in the Advanced Edition of the Norton Utilities, this is a powerful tool; use it with the utmost caution.

Searching for Data [E S]

From the Explore Disk menu, you can search any part of the disk, or any item on the disk, for specific data. If you want to search a specific item–a file, cluster, sector, or absolute sector–you should select that item from the Explore Disk menu first before going to the Search Disk for Data menu. If you'll be searching the entire disk for the data, you don't need to select an item first. In either case, press S, Search item/disk for data, to start a search.

The Search Item/Disk for Data menu appears. If you want to search something other than the chosen item–say the entire disk, or all of the erased file space or data area–you should press W (or Enter), to specify where to search. (If NU finds your data while searching the entire disk, the entire data area, or the erased file space, the item in which the data was found is automatically made the selected item, as described below.)

If you've already selected an item from the Choose Item menu–a file, for example–and that is what you want to search through, you can skip the Where to search choice. Before doing that, however, you should verify that you and NU agree on the chosen item, by looking in the box at the lower right of the screen, labeled "Where to search." It should indicate the same item you picked with Choose item in the Explore Disk menu. If the box already names the item you want to search, you don't need the Where to Search menu; skip to the section, "Specifying the Text to Search For."

Specifying Where to Search [E S W]

The Norton Utilities Main Program can search for your data anywhere on the disk, in the data area only, or in the erased file space only:

- Press A to search All of the disk, including the DOS areas (the boot record, the FAT, and the root directory), the in-use data area, and the available-data area. If NU finds your data while searching all of the disk, the sector in which the data is found automatically becomes the selected item.
- Press D to search the Data area. The data area includes all of the disk space devoted to data, whether it is currently in use, is currently available, or has erased files in it. This choice *excludes* the DOS areas (the boot record, the FAT, and the root directory). If NU finds your data while searching the Data area, the cluster in which the data is found automatically becomes the selected item.
- Press E, Erased file space, to search the available data area. (The erased file space includes both the area of the disk that has never been used and those areas of the disk from which files have been erased.) If NU finds your data while searching the Erased file space, the cluster in which the data is found automatically becomes the selected item.

Note that if you're searching the entire disk for data, rather than searching a particular item, you needn't first choose an item from the Explore Disk menu, since any successful search has the side effect of automatically selecting the sector or cluster in which the data is found.

Specifying the Text to Search For [E S T]

The next item on the agenda is to specify the Text to search for; press T to move to that menu.

This menu has two data-entry windows, each a reflection of the other. You can type the search text directly from the keyboard into the upper window, where it will appear as standard (i.e., ASCII) characters; simultaneously, the hex equivalent of the ASCII characters appears in the lower, hexadecimal format, window. Alternatively, you can enter the search data in hexadecimal in the lower window, in which case its ASCII equivalent appears in the upper window. The search is case-insensitive. You can enter the string in either capital letters, lowercase letters, or a combination; the results will be the same.

You are not constrained to entering data in one window or the other; you can move between the two windows (by means of the Tab key) anytime you wish.

Press the Enter key to end data entry and return to the Search Disk menu.

Starting the Search [E S S]

Press the S key, Start search, to begin searching for your specified data. Note that the search string now appears in the box at the lower left of the menu.

NU searches the specified area for your data. When the data is found or the specified area has been searched to the end, a message indicating the success or failure of the search appears. Press any key to return to the Search menu.

If the search is unsuccessful, you can try again by entering a different search string, selecting a different item or area to search, or both. If the search is unsuccessful and you're searching for text, you might try a shorter search string; while that can turn up more "false alarms," it also improves your chances of a successful search. Also note that text might have a carriage-return line-feed pair embedded in it; if you don't specify that in your search string, the search will fail. This is another reason for keeping the search string short.

If the search is successful, the highlight will be on the "Display found text" when you return to the Search Disk for Data menu. Press Enter (or the D key) to view the text.

You can view and edit the text in any of the formats, exactly as described above.

If the search was of "All of the DOS disk," the "Data area," or the "Erased file space," the selected item will be either a sector or cluster (sector for "All of DOS disk," cluster for the other two choices). You can find out the item the cluster or sector belongs to, choose that item from the Choose Item menu, and re-enter the viewer/editor to see the data in its context.

Continuing the Search [E S C]

If the found text is not part of the data you were looking for, press C, Continue search, to resume the search with the same search string.

Press L or the Esc key to exit the Search menu and return to the Explore Disk menu.

Write Item to Disk [E W]

From the Explore Disk menu, you can copy any selected item to either the same disk or another disk. Press W, Write item to disk, to copy the selected item.

The Select Write Mode menu appears. This lets you choose how the data will be written.

- Select File mode to write the data as a standard DOS file. You will be prompted for the name of the file. If you give the name of an existing file, the existing file will be overwritten. To be written in file mode, the selected item needn't be a file; you can write a cluster or sector to a file. File mode is the safest way to write data, since all the DOS safeguards are available.
- No matter what mode you choose to write the data in, you will be prompted for the disk you wish to write the data to. You can write the data to the same disk or any other recognized DOS disk.
- Select C, Cluster mode, S, Sector mode, or A, Absolute Sector mode, to write the data out as a cluster (or range of clusters), sector (or range of sectors), or absolute sector (or range of absolute sectors). You will be prompted for the starting cluster or sector number. NU will first verify that there is room on the disk for the data, and then, since you may be overwriting existing data and the DOS safeguards inherent in file mode are not available, you will be asked for confirmation before the data is actually written.
- The data will be written into contiguous clusters or sectors, *whether those sectors are in use or not.*

- **WARNING: Be aware of what you are doing; this is an irreversible operation.** If you write a cluster in sector mode, for example, and your disk has 8-sector clusters, you will overwrite both the sector number you specified as the starting sector number, *and the following seven contiguous sectors*. Make sure that's what you want before proceeding. Note that if you write a single sector to a cluster, the sector will be written to the first sector of the cluster, and the remaining sectors of the cluster will contain the original data.

After the data is written (copied) to the specified disk, you will be returned to the Explore Disk menu. Press the R key to exit the Explore Disk menu and Return to the Main Menu, or the F10 key to quit the Norton Utilities. Or you can press the Esc key to back up a menu, which in this case would also get you to the Main Menu.

NU–UnErase

The UnErase function of the Norton Utilities main program offers sophisticated capabilities for recovering erased files. UnErase offers an interactive environment in which your knowledge of a lost file is used copacetically with UnErase's knowledge of disk and file structure, allowing you to recover files that the less powerful recovery methods of Quick UnErase (QU) cannot restore. You should, however, always give QU a try before firing up UnErase. If QU is unable to recover the file, or recovers the file partially or incorrectly, erase the file again and run UnErase.

To run UnErase, from the Main Menu, press U, UnErase.

The Recover Erased File menu will appear, with the highlight already on Select erased file. When you move to the Select Erased File menu, the erased filenames you will see are those from the drive and directory shown in the middle two information boxes at the bottom of the screen. Therefore, before moving to the Select Erased File menu, you should verify that the file you intend to recover was located in the directory and drive indicated at the bottom of the menu.

If the file was in a different directory or on a different drive, you should select that drive and/or directory at this time. Press C, Change drive or directory, to move to the Change menu.

From the Change Drive or Directory menu, press C to Change drive, or D to change Directory.

If you are changing the drive, select the new drive by typing its letter or moving the highlight over the drive letter and pressing the Enter key. You will be returned to the Change Drive or Directory menu, with the highlight now over the change Directory choice.

If you need to change the directory, press D, change Directory.

A visual tree of the directory structure of the disk will be displayed, with the highlight on the currently chosen directory. Use the cursor keys to to move the highlight to the desired directory, and press the Enter key to select the directory under the highlight.

You will be returned to the Recover Erased File menu. Because you must select an erased file to recover before you can enter the UnErase menu itself, the menu choice called "Unerase menu" is shown in parentheses, with no hot key indicated, like this:

```
(unerase menu)
```

This convention–surrounding a menu choice with parentheses and omitting hot-key indication–always signifies a menu choice that can't be chosen *until another menu selection is completed*–in this case, the selection of an erased file. Press the Enter key or S to move to the Select Erased File menu.

A list of erased files in the directory and drive you have chosen will be displayed. (The directory and drive are again indicated in the information boxes at the bottom of the screen.) The first character of each erased filename will have been replaced with a ? (question mark), to indicate that the first letter was lost when DOS erased the file. See the booklet *The Norton Disk Companion* for a complete explanation of how DOS erases files and how it is possible to recover an erased file.

Select the file you wish to UnErase using Speed Search (as described under the Explore section) or by moving the highlight with the cursor keys. (When using Speed Search in this menu, you don't need to type the question mark.) When the highlight is on the desired filename, press the Enter key to choose the file. Now type the first letter of the filename.

If you don't see the filename you are looking for, first make sure you are looking in the right directory and on the right drive, and change the drive or directory if necessary. If you *are* in the right directory, it's possible that the directory *entry* for the file you want got overwritten, but the file's *data* didn't. If this is the case, you will need to create a new directory entry; press Home to move the

cursor to the Create file option. Then press Enter, type in a filename, and press the Enter key again. NU will create a new file entry with a zero length and the name you specified.

After selecting a file to UnErase, the Recover Erased File menu will reappear, with the highlight on the UnErase menu choice. Press the Enter key or U to move to the main UnErase menu.

The UnErase menu is actually two different menus displayed side-by-side. The two menus are displayed on the same screen because of the high degree of interactivity between them: You will find yourself constantly shuttling back and forth from one menu to the other when you work on UnErasing recalcitrant files, and being able to look at both menus at once makes the job much easier.

To move between the two menus on this screen, press the Tab *key at any time.* The currently active menu will have the highlight bar in it, and the hot keys will be shown in **bright** letters.

At the top of this menu, two very important pieces of information are always displayed: the number of clusters in the original file and the number of clusters so far added to the file during UnErasing. The number of clusters in the original file is taken from the erased file's erased directory entry; all the clusters shown may or may not be recoverable. (If you choose Create file, there is no pre-existing directory entry, so the number of clusters needed is shown as 0. In this case, of course, you should ignore this number.)

The menu on the left displays choices for examining and rearranging the clusters you have found. The menu on the right displays the methods available to find file clusters.

At the bottom of the screen, directly above the information boxes, is a list of the clusters you have found so far. This list will grow as you add new clusters, using the choices from the menu at the right. You can scroll through the list of found clusters with the left and right arrow keys, and the Ctrl-Home and Ctrl-End keys.

When you enter this menu, the highlight will be on the "Add new clusters" choice in the left-hand menu. To find your file's clusters, first press A or the Enter key to move to the right-hand menu. To find your file's clusters:

- Press A to let UnErase find all the file's clusters Automatically. This choice is equivalent to running Quick UnErase. You may want to start with this choice and use the found clusters as a base that you can prune and add to via the other choices in this menu.
- Press N to let UnErase pick the Next most probable cluster for you.
- Press C to pick a Cluster or range of clusters by number. You will be presented with a menu with two response boxes, into which you can type the starting and ending cluster numbers. Use the Tab key to move between the boxes; press the Enter key with the cursor in the second box to exit from this menu. If you specify a cluster currently in use by a file (or cluster 0), NU automatically switches into zoom mode. The "zoom" feature is a powerful way of finding a group of unused clusters or sectors. If you give a range, "zoom" will find the first free block of sectors or clusters within the selected range. If only a single cluster is selected, then "zoom" will find the first free cluster or sector, starting at the specified cluster or sector number.
- Press S to pick a cluster or range of clusters by indicating Sectors within the cluster. Enter sector numbers the same way you enter cluster numbers (see above).
- Press D to find clusters by searching for Data within the cluster. The process of searching for data is identical in both the Explore disk function and UnErase.

If you chose All clusters automatically, UnErase will automatically move the highlight to the Save erased file choice in the left-hand menu. If you chose a cluster by any of the other methods–selecting the Next probable, selecting a cLuster or Sector number, or by searching for Data–you will be moved to the Review Cluster(s) menu.

The Review Cluster(s) menu gives you the chance to display (and edit, if desired) the found cluster(s), add them to the file your are building, or discard them altogether and continue.

- To display or edit the cluster or clusters, press D, Display/edit cluster(s). This Display/edit function in UnErase operates identically to the one in the Explore disk function.
- If, after viewing the data, you decide it belongs in the file, press A to Add cluster(s) to file. (If you're not sure, you can keep the cluster for now and easily remove it later.)

Or

- If after viewing the data, you realize it doesn't belong in the file, press S to Skip (discard) the cluster(s).

You will be returned to the Find Erased File's Data menu, with the highlight in the right-hand menu, still on your previous choice. At this point, you can:

- Continue to find more clusters, as just described,

or

- Press the Tab key to move to the menu on the left-hand side, where you can examine and edit already found clusters, rearrange the order of clusters, remove clusters, examine a map of the found clusters, and save the erased file.

The left-hand menu choices refer to the "selected cluster" and the "found clusters." The term "selected cluster" refers to the cluster number with the highlight over it in the "Clusters added to file" list at the bottom of the screen (directly above the information boxes). The term "found clusters" refers to all the clusters in the list.

Operations in the left-hand menu are divided into two categories, separated by a blank line. Operations in the first (top) group work on a single cluster (the selected cluster); those in the second group operate on the entire list of found clusters.

From the left-hand menu, you can perform any of the following operations on found clusters:

- Examine or edit a selected cluster. This is the same option you are given after you have located a cluster using the right-hand menu. Press E to Examine/edit a single selected cluster.
- Move the selected cluster; i.e., change its location in the list of selected clusters. (Note: when you save the recovered file, clusters will be written to the file in the same order as they appear in the "Clusters added to file" list.) To move a cluster, first position the highlight on the cluster to be moved, then press M, Move selected cluster. Use the left and right, and Ctrl-Home and Ctrl-End cursor keys to reposition the cluster in the list; when you're moving a cluster, the cluster under the highlight simply moves *with* the highlight. When you have positioned the cluster where you want it, press the Enter key to deposit the cluster at the new location and terminate the operation.
- Remove the selected cluster. To remove a cluster from the cluster list, position the highlight over the cluster to be removed, and press R, Remove selected cluster. Clusters to the right of the right of the removed cluster will slide left to fill up the hole.
- Display and edit all found clusters. This is the same operation as the first one, Examine/edit a selected cluster, except that you can page back and forth through all the clusters in the "Clusters added to file" list. Press D to Display/edit a group of clusters.
- Display a visual map of found clusters. This option paints a "map" of the entire disk, with the location of all found clusters highlighted, and lists various information about the file you are recovering, such as its name, attributes, date and time of creation or last modification, starting cluster number, and size. Press V to display a Visual map and list information about the found clusters.
- Save the erased file. Press S to Save all the found clusters to a file. The clusters will be written to the file in the same order as they appear in the "Clusters added to file" list. After saving a file, you will be returned to the Recover Erased File menu.

Some Notes on Saving the File

If you have selected a different number of clusters (more or fewer) than the erased file originally had, a menu will appear asking for permission to adjust the file size. Adjusting the file size simply means that the file's directory entry will be updated to reflect the number of clusters you have actually found. Normally, you will want to press A to Adjust the file size. If you wish to retain the old file size, press D, Don't adjust file size.

You can leave UnErase without saving the file. If, however, you attempt an operation that will lose the work you have done so far (such as selecting a new directory in the Explore Disk or Choose Item menus), UnErase will request confirmation that you want to abandon your "work in progress." Pressing N, No, will abort the operation that would have lost your work but won't automatically return you to UnErase; that lets you use the capabilities of Explore Disk while you are recovering a file, without fear of losing your work in progress. When you are finished working in the Explore Disk function and return to UnErase, your work will be as you left it. (The main reason for needing Explore Disk in the middle of recovering a file with UnErase would be to use its Search disk for data function. This function in Explore Disk can search across the entire disk; the equivalent function in UnErase searches only across the erased data space.)

QU–Quick UnErase

Purpose Recover erased files quickly and easily, using automated methods.

Command Format

QU [*filespec*] [/A]

Switch

/A UnErase all files Automatically.

Description Quick UnErase offers a quick and convenient way of recovering erased files with no user intervention. If you have not written to the disk since you erased the file, or if you are recovering erased files from a small disk (i.e., a floppy disk rather than hard disk), Quick UnErase has a high probability of success. It's always safe to try Quick UnErase first; use the UnErase feature in the Norton Utilities Main Program when QU fails and more sophisticated UnErasing functions are needed.

Quick UnErase works in one of two modes–interactive or automatic. In interactive mode, QU displays all the information that is still available about each erased file in the directory (or about each file that matches the *filespec*, if the *filespec* specifies multiple files). This information includes all of the name except the first letter (which DOS overwrites when it erases a file), the file's former size, and its time and date stamp. This information can help you select which files you wish to UnErase. When you select a file, QU asks for the missing first character of the filename.

Automatic mode (/A). In automatic mode (with the /A switch selected), QU attempts to recover every erased file in the directory without assistance from you. QU automatically fills in the missing character of the filename, using the first letter of the alphabet that provides a unique name. Later you can use the DOS RENAME command to give the files their proper names.

When QU starts, it reports the number of candidates there are for UnErasure. You may not be able to UnErase them all, however, since UnErasing one file can interfere with the chances of UnErasing others.

Background Info

See the booklet *The Norton Disk Companion* for background information about UnErasing in general. (You don't, however, have to know how UnErasing works to use QU effectively.)

Tips and Suggestions

QU attempts to UnErase files only when it appears that all the file's data can be recovered successfully. NU's more sophisticated methods are able to recover partial files. It's always safe to first try recovering a file using QU. After using QU, check your results. If you have not recovered the right data, erase the recovered file to undo QU's work, then use the more powerful UnErasing facilities in NU.

If you have a number of files with similar names to recover at once, it's probably easier to let QU recover them all automatically, using the /A switch. You can then view the files to determine how they should be renamed.

Examples

If you want to	Type this command
Run Quick UnErase in interactive mode	QU

QU will present a list of all erased files in the directory, one-by-one, letting you specify which ones you wish to recover. You will be asked to supply the first letter of any file you wish to Quick UnErase. (QU displays a question mark in place of the first character, which DOS overwrites when it erases a file.)

Quick UnErase the file named Phoenix.ash `QU phoenix.ash`

Quick UnErase will search for and automatically UnErase an erased file named ?HOENIX.ASH (QU displays a question mark in place of the first character, which DOS overwrites when it erases a file), renaming it back to PHOENIX.ASH. If more than one erased file named ?HOENIX.ASH is found, QU will prompt for the first letter of the second and any additional files.

Quick UnErase all worksheet (.WK1) files in your 123 directory `QU \123\*.wk1`

Quick UnErase will ask for confirmation and the first letter of each filename before UnErasing.

Quick UnErase all the files in the current directory `QU /A`

The /A switch sets Automatic mode. Quick UnErase will automatically UnErase all recoverable files, supplying the letter A as the first letter of the first UnErased file, B as the first letter of the second erased file, and so on. You can then rename the filenames appropriately.

SA–Screen Attributes

Screen Attributes has now been incorporated into the Batch Enhancer (BE) program. Please refer to the section describing Batch Enhancer for complete details on how to use the new version of Screen Attributes.

SD–Speed Disk

Purpose Speed up disk operations by eliminating file fragmentation and prioritizing directory and file placement; generate a report on fragmentation.

Command Format

SD [*d:*] [*Switches*]

or

SD [*item-to-report-on*] [*Switches*]

Switches

/C	Complete Optimization
/D	Directory optimization
/P	Pause display after each screenful. (Pressing any key also pauses the display)
/Q	Quick compress optimization
/REPORT	Generate a fragmentation report but do not rearrange the disk
/S	Report on files in subdirectories
/T	Show Totals only
/U	Unfragment files optimization

Description

Speed Disk reorganizes the physical layout of all files and directories on a disk so as to minimize movement of the read-write head, thereby optimizing the speed at which data will be read off the disk.

Speed Disk can perform a number of different optimizations as it re-arranges the disk; all directories in the path, for example, are by default placed before all files at the beginning of the disk. Various options let you fine-tune the specific placement of directories and files for maximum performance.

You can also use Speed Disk to generate a report indicating the percent fragmentation of a disk, subdirectory, or file. The report is useful for determining how often to run Speed Disk.

Special Considerations When Running Speed Disk

Don't turn off or otherwise disable your machine while Speed Disk is running. This is the same caveat that applies any time your computer is writing to the disk, since turning off the power at such a time could damage files. You can safely interrupt the operation of Speed Disk before it has finished by pressing the Esc key.

Make sure you don't have any memory-resident programs active that might access the disk while Speed Disk is running.

After Speed Disk has finished its work, you'll be given the option of rebooting your system. You'll want to do this if you're using the DOS 3.3 (and higher) FASTOPEN program.

To Unfragment a Disk

To have Speed Disk optimize the layout of files on your disk, type:

```
SD
```

The program will prompt for the drive you wish to optimize. (You can also specify the drive on the command line.) There will then be a delay as Speed Disk analyzes the selected drive, after which a map of the disk will

materialize. An options menu will appear in the lower left, with the first item, "Optimize Disk," selected.

To start optimizing using the default sort options and optimization method, simply press the Enter key. The default sort option moves all directories in the path to the front of the disk; the default optimize option is Complete.

Menu You can fine-tune the way Speed Disk will optimize your disk using the selections which appear in this menu.

Optimize Disk Select this item to begin optimizing the disk according to the currently-selected options.

Change Drive At any time you may select this option to change the drive.

Set Options Speed Disk lets you customize the layout of files and directories on your disk to provide maximum performance for your particular work style. You can specify the placement of directories; files to be moved to the front of the disk; files that should not be moved at all; and the type of sorting to perform. You can also elect to verify the operation using this menu.

All options are saved in a file called SD.INI, in your root directory. The next time you run Speed Disk, they will be automatically set as your default options.

Directory Order

This option lets you specify the sort order of directories on the disk. The specified directory order appears in a window on the right side of the screen. All directories that appear in this window will be placed at the beginning of the disk, minimizing their access time. The default order is the path. A directory tree appears in a window on the left side of the screen. Use the Tab key to move between the two windows.

To **Add** a directory, use the Tab key to move the highlight to the Tree window. Highlight the directory to add using either speed search (just start typing the name), or the up and down arrow keys. When you've located the directory you wish to add, press the Enter key; the directory will be

added to the end of the directory list in the right hand window.

To **Move** a directory, make sure the highlight is in the right hand directory sort window (if necessary, press the Tab key to change windows), use the Left and Right arrows to select *Move*, and press the Enter key. Now use the up and down arrow keys to move the selected directory up and down in the list. Finally, deposit the directory at a given location by pressing the Enter key.

Delete a directory from the list by first using the up and down arrow keys to highlight it. Then use the left and right arrow keys to select *Delete*, and press Enter.

When you've finished arranging the directory to your satisfaction, return to the main screen by highlighting *Done* and pressing the Enter key.

Files to Put First

Use this option to move selected files to the front of the disk. An empty box will appear; type the name of the file into the box, and press Enter. You will be given another box for the next file name. When you're finished, make sure the cursor is in an empty box, and press the Enter key. This option is particularly use in conjunction with wildcards; typing:

```
*.exe
*.com
```

would move all executable files toward the front of the disk. This is a pretty good idea, since these files tend to be read frequently, but never written.

Unmoveable Files

By default, all hidden files are considered unmoveable by Speed Disk. Add and delete files from this list using the methods described above.

Optimization Method

Speed Disk offers four different techniques for optimizing your disk. These range from a complete but lengthy full optimization, to a quick and dirty Quick Compression.

Complete Optimization
The is the most complete method of optimizing your disk, and offers the greatest improvements in disk speed. The tradeoff is that is takes the longest to run. In this method, all directories you specified are moved toward the front of the disk, as are any files you specified. Then all other files are unfragmented, as data is compressed and moved forward. When this optimization is finished, there will be no "holes" in your disk structure.

File Unfragment
This method, which is faster than full optimization, will attempt to defragment as many files as possible. It won't necessarily fill in all the "holes" in your disk, and some large files may not be unfragmented at all.

Only Optimize Directories
The only data moved in this method is directories. Files are not unfragmented, and "holes" may (indeed, probably will) remain in the disk structure. Nonetheless, optimizing the directory layout can effect a significant improvement in disk speed. This optimization is very fast.

Quick Compress
This method simply moves data forward on the disk to fill in the free space. It does not unfragment files. This method is fast, but may or may not effect significant speed improvements. The advantage to this method is that any new files you add will go at the end of the disk, and be unfragmented.

Verify On/Off
You can choose to have data that is written read back immediately to confirm accurate operation. By default, this option is off.

Disk Statistics This option reports on a number of optimization-related disk parameters.

Exit Speed Disk Choose this option when you want to leave Speed Disk and return to DOS.

To Generate a Report

To guide you in determining when Speed Disk needs to be run, you can ask the program to generate a fragmentation report by specifying the /REPORT switch. When you use the /REPORT switch, SD only generates a report; it does not rearrange the disk. You can ask for a report on the whole drive, a directory, or a file. For example:

```
SD /REPORT
```

would generate a report on the entire default drive, while:

```
SD \progs /S/REPORT
```

would generate a report on all of the files in the Progs directory (assuming progs was a directory name), as well as all files in the subdirectories of Progs. A report of 100 percent indicates no fragmentation.

Running Speed Disk in Batch Mode

To run Speed Disk in batch mode, follow the program name with the drive letter you wish to optimize, plus any switches. Any of the sort methods available in interactive mode can be specified using the switches /C for Complete; /D for Directory only; /Q for Quick Compress; and /U for Unfragment only. Also, any sort options that were set when you last ran Speed Disk interactively will be automatically used as defaults now, although command line switches will take precedence over such default settings. (Your sort choices are saved in the file SD.INI each time you run Speed Disk interactively. See the description of SD.INI under *Set Sort Options*, above.)

Speed Disk and Copy-Protected Software

Certain copy-protected programs put one or more files on your hard disk that must not be relocated. These programs make note of where on the disk the files were initially installed; if the files are subsequently moved, the copy-protection scheme assumes an illegal copy has been made and won't let the program run. Most of these protection techniques set the hidden or system attribute (or both) for their immovable files; a few use other methods.

Speed Disk takes special precautions to avoid disturbing such programs. Each file on the disk is examined separately. The following items are never moved: any

hidden file or hidden subdirectory, any files within a hidden subdirectory, and any subdirectories of hidden subdirectories. There are a few copy-protection schemes (from Vault and Softguard Systems, for example) that do not hide their copy-protected program files. Speed Disk recognizes these files as well and does not move them. You can override this and have these files moved, however, by explicitly deleting them from the list of Unmoveable Files, using the Unmoveable Files option in the Set Sort Options menu.

Warning Because of the plethora of different compatibles and strange copy-protection schemes, it is impossible to verify beforehand that Speed Disk is compatible with each and every combination. Therefore, *before running* SD *on your machine the first time, we highly recommend that you back up your entire hard disk.* After you have verified once that Speed Disk is compatible with your machine, this precaution shouldn't be necessary.

Examples

If you want to	Type this command
Speed Disk the C: drive	`SD C:`
Generate a fragmentation report for the C: drive.	`SD C: /REPORT`
Generate a report on report on the file FRAGMENT.ED.	`SD FRAGMENT.ED /REPORT`
Run Speed Disk Interactively	`SD`

A report of 100 percent indicates no fragmentation.

This example assumes that FRAGMENT.ED is in the current directory.

To run Speed Disk in interactive mode, type the program name without any switches or other parameters.

SF–Safe Format

Purpose Provides a safer, faster, easier-to-use alternative to the DOS FORMAT command. Makes it easier to recover from accidental formatting.

Command Format

SF [*d:*] [*switches*]

or

FORMAT [*d:*] [*switches*]

Note: Use the latter form only if you substituted SF for DOS's FORMAT command using the installation program.

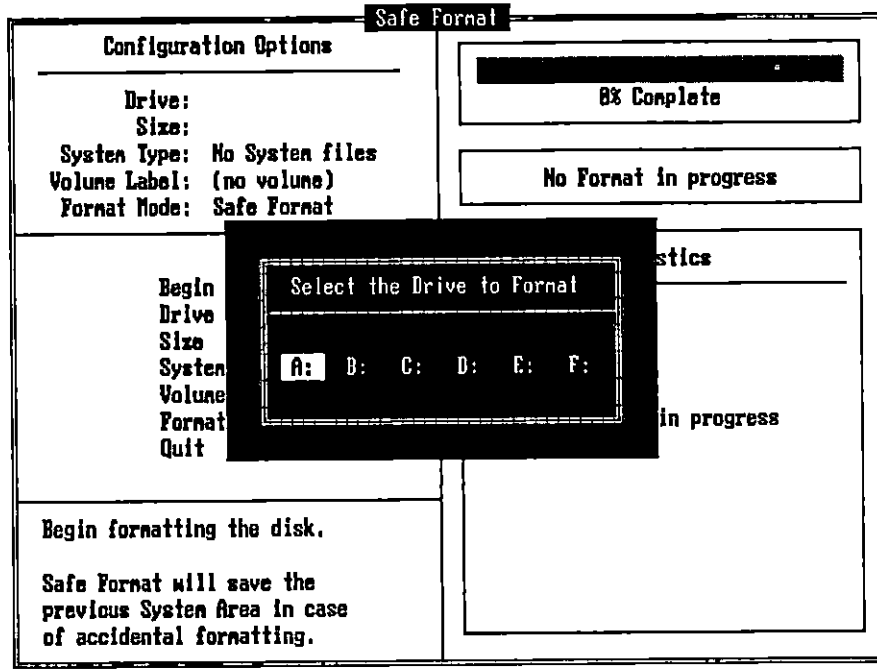
d: letter of the drive you wish to format.

Switches

/A	Automatic mode; useful in batch files
/S	Copy system files to disk
/B	Leave space for system files
/V:*label*	Place volume label with text *label* on disk
/1	Format single-sided
/4	Format 360k diskette in 1.2m drive
/8	Format 8 sectors per track
/N:*n*	Number of sectors per track (*n*=8, 9, 15, or 18)
/T:*n*	Number of tracks (*n*=40 or 80)
/size	Size of diskette (e.g. 720)
/Q	Use Quick Format
/D	Use DOS Format
/C	Use Complete Format (diskettes only)

Description

Using the installation program, you can substitute Safe Format for the regular DOS FORMAT command. In the process, DOS FORMAT is renamed to XXFORMAT. Then, whenever you enter FORMAT, the following appears:



Safe Format screen

If you run Safe Format without a drive specification, you will first be asked to indicate what drive to format. This is done via a dialog box. You may use the left and right arrow keys to indicate your choice; press Enter to put it into effect (alternatively, type the letter corresponding to the drive you wish to format, e.g "a", "c", etc.)

Safe Format does not begin operating right away. This gives you the opportunity to change settings or cancel the whole procedure prior to formatting.

The Safe Format screen is divided into two main areas. On the left are controls and an area where helpful information is displayed. On the right are displays for the amount of

formatting yet to be done, current status, and statistics regarding the disk being formatted.

At the center left is a function menu. Use the arrow keys to move the highlight to the function you wish to execute. Press Enter to initiate. Alternatively, you may type the first letter of the function (i.e. "b" for Begin Format, "d" to change drives, "q" for Quit, etc.).

Functions available are:

Begin Format

Pressing Enter with the highlight over Begin Format (or typing the letter "b") initiates formatting. If the disk contains data, you will be asked whether you wish to proceed. This gives you the chance to remove important disks before formatting.

Drive Pressing Enter with the highlight over Drive (or typing the letter "d") brings up a dialog box that lets you select which drive to format. Use the left and right arrow keys to move the highlight to the drive you wish to format and press Enter. You may also type the drive letter. The current setting for this parameter is shown at the bottom of the dialog box. Press Esc to exit the dialog box without making changes.

Size Pressing Enter with the highlight over Size (or typing the letter "s") brings up a dialog box allowing you to select how much data can be put on a floppy disk. You will have a range of choices up to the maximum that the currently-specified drive can support. Use the left and right arrow keys to move the highlight to the desired size and press Enter. Esc exits without changing the current size setting, which is shown at the dialog box's bottom. Note: You cannot use this option to change the size of a hard disk partition; you must use DOS's FDISK command to do that. If you attempt to change the size with the current drive set to a hard disk, a dialog box appears telling you this is not permitted. Press Enter or Esc to dismiss the dialog box.

System Type

Pressing Enter with the highlight over System Type (or typing the letter "t") brings up a dialog box in which you

may specify whether or not to install the DOS system files on the newly-formatted disk. You may also choose to reserve space for such installation at a later date without actually installing at present. Use the arrow keys to choose the option you desire and press Enter to put it into effect. Press Esc to leave the dialog box without making changes.

Volume Label

Pressing Enter with the highlight over Volume Label (or typing the letter "v") allows you to enter a one to eleven-character name for the disk to be formatted. (This is the name returned in the DOS DIR command and our VL command, among others.) Type the name and press Enter. Press Esc to dismiss the dialog box without changing the current volume label setting.

Format Mode

Pressing Enter with the highlight over Format Mode brings up a dialog box in which you may set the type of format to do. The dialog box contains a menu of four choices. Use the arrow keys to move the highlight to your choice and press Enter to put it into effect. Choices are summarized below:

Format Mode Options

Safe Format

With this option in effect, Safe Format will use our own formatting algorithm, which is faster and safer than DOS's. For one thing, we do not erase all data on a disk. And because the information is stilll on the disk, both Quick UnErase and Unremove Directory will be able to recover your data after a Safe Format, which they can not do if you use the Format command supplied with your DOS. This mode is also much faster than DOS FORMAT.

Quick Format

This option results in use of an even faster formatting procedure. In effect, it simply places a new system area on the disk. This is good for erasing floppies without reformatting them or to

remove a large directory tree from a hard disk. This format mode takes just a few seconds.

DOS Format

With this option in effect, Safe Format uses DOS's own formatting procedure. All data on floppy disks is erased.

Complete Format

This option functions like Safe Format, except bad sectors are reformatted to make the disk more reliable. This mode is only available on diskettes, not hard disks.

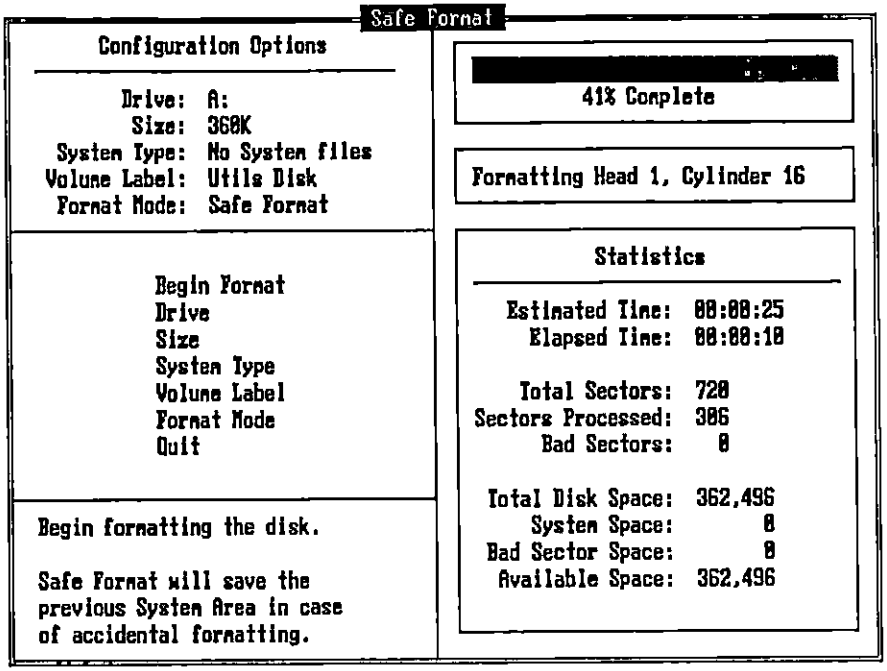
Quit

Move the highlight to Quit and press Enter (or type the letter "q") to exit Safe Format.

Important Note: If you have a disk that you don't want to be formatted in the selected drive, be sure to remove it before proceeding! If the disk contains data, you'll be given the chance to remove it before proceeding, but better safe than sorry.

Move the highlight to Begin Format and press Enter (or type the letter "b") to begin formatting.

Safe Format first analyzes the disk; a dialog box informs you of this fact. As formatting proceeds, the amount of work completed is recorded (in percent) in a graph at the top right of the screen. Below this, another progress window informs you which head and cylinder are currently being formatted. Finally, a set of statistics regarding the size of the disk, estimated time to format, total sectors and number of bad sectors, and total disk space in bytes, is displayed in the statistics window at the bottom right.



Safe Format in progress

When formatting is completed, a dialog box appears announcing this fact. Press Enter or Esc to send it away.

Move the highlight to Quit and press Enter (or press Esc with the highlight in the function control area at the lower left) to exit Safe Format.

Background Information

Before formatting a disk, Safe Format analyzes it, saving the information it gathers in a special file. Using this information, data on the disk can be reconstructed easily even after formatting is complete. In particular, the UnErase feature of the Norton Utilities main program has been enhanced to take advantage of this feature.

Note that if you do accidentally format your disk using Safe Format, you can use the RESTORE option with Format Recover to fully recover your data.

Safe Format Keys

Up, down arrows
Select function (Begin, Quit, or change parameters)

Enter Initiate function.

Esc Exit program.

SI–System Information

Purpose

Perform and report the results of three performance tests, determine the computer's configuration (including the total amount of memory and the amount of available memory), and report other information about your computer.

Command Format

SI [*d*:][*switches*]

Switches

/A — ANSI mode; skips the BIOS-specific features of SI.

/N — Skip the live memory probe, which can require a reboot on certain computers.

/LOG — Prepare the report in a format suitable for printing or sending to a file.

Description

SI displays a report about your computer. Three performance indexes are shown: a Computing Index (CI), a Disk Index (DI), and an overall system Performance Index (PI). PI combines the Computing Index and the Disk Index into a composite indicator of overall performance. All test results are reported as indexes relative to the (8088-based) IBM PC-XT (with the XT as 1.0).

Memory tests. SI issues two separate memory reports. The first is based on information supplied by DOS; it shows the total amount of memory, the amount reserved by DOS and resident programs (such as ProKey and Sidekick), and the amount available for your application programs.

The second is based on a live test, performed by probing every part of the computer's memory. On some computers, when SI attempts to probe memory that does not actually exist, the computer reports a parity error and "locks up." *This does not harm your computer*, but it does require you

you to reboot the computer. The /N (No memory test) switch allows you to bypass this test.

The memory test reports four categories of memory: amount of main memory (usually equal to the total amount of main memory, as reported by DOS); memory used by screen display adapters; expanded and extended memory, and memory used by ROM-BIOS extensions.

Type of computer. SI attempts to identify and report the type of computer it is running on, the main microprocessor, the DOS version it is running under, and the BIOS date.

Attached equipment. Finally, SI determines and reports the equipment attached to your computer, including coprocessors, parallel and serial ports, video display adapter(s) and current video mode, and number of logical disk drives.

Type of computer. SI can identify the computer it is working on within practical limitations. SI recognizes and reports all the standard PC family members. SI also recognizes specialty models of the PC family, such as the 3270-PC, and many PC compatibles; but it can't identify all MS-DOS computers in existence. If SI doesn't recognize your machine, it will attempt to find and show you identifying marks, such as a copyright notice in your computer's ROM-BIOS.

ROM-BIOS extensions. Some add-in boards have on-board ROMs that control the operation of equipment on (or attached to) the boards. These ROMs get "mapped" into the PC's memory space and are reported by SI as "ROM-BIOS extensions." If you have a PC with a hard disk, for example, you will probably see a ROM-BIOS extension reported at address C800, the standard address for the hard disk control ROM.

Performance tests. SI measures two aspects of your computer's performance: processor performance, which is reported as CI (Computing Index), and disk performance, which is reported as DI (Disk Index). These two indexes are weighted and combined to generate the indicator of overall system performance, PI (Performance Index). The indexes are calculated relative to the performance of an

PC-XT; a CI of 2.5, for example, means the processor in your computer is two and a half times faster than that of a standard XT.

The /A Switch. Certain computers report an "invalid error" message when SI is run without switches. If this happens on your machine, rerun SI with the /A (ANSI) switch.

Tips and Suggestions

SI can provide useful information about the computers with which you come in contact. Information about the system memory overhead (the difference between total memory and the amount of memory available to your programs), for example, can be very valuable in helping you decide how much memory to devote to resident programs such as disk buffers or keyboard enhancers.

If you are concerned about the cumulative cost of the resident programs and buffers you are using, you can easily monitor how much memory they take up by looking as SI's DOS memory report. First, look at how much memory is currently being used. Then restart your computer without resident programs and buffers and run SI again. Now you can add the resident programs one by one and examine the memory cost of each with SI.

For any computer that is unfamiliar to you, SI may be helpful in quickly showing you the number of logical disk drives, the amount of memory available, and the relative performance.

TM–Time Mark

Purpose Record and report elapsed time using up to four independent stopwatches; display the current time and date.

Command Format

TM [START] [STOP] [*comment*] [*switches*]

START Resets the stopwatch, and displays the time and date.

STOP Displays the interval since the last start; does *not* reset the stopwatch.

comment is displayed when the command is executed; useful when you are running multiple timers via batch files. If a comment includes space characters, enclose the comment within quotes.

Switches

/C*n* Selects one of four independent counters (stopwatches), numbered 1 to 4. Timer-counter C1 is used when this option is omitted.

/L Place TM information on the Left side of the screen; information is displayed on the right when this switch is omitted.

/LOG Format the output for printing or LOGging to a disk file.

/N No time and date display; show elapsed intervals only.

Description

Time Mark performs two useful functions: it displays the time and date in a legible format, and its acts as a stopwatch (or up to four stopwatches) to time the duration of your computer operations.

Time Mark shows the current date, time, and elapsed time like this:

```
9:41 am, Friday, October 23, 1986
2 hours, 11 minutes, 3 seconds
```

The elapsed time (second line) appears only when you use the STOP parameter; without it, TM just displays the current time and date.

Starting the clock. The START parameter causes the timer (C1 if /C*n* is not specified, otherwise the timer specified by /C) to be reset to 0 and turns the timer on.

Elapsed time. The STOP parameter causes TM to display the time interval since the last START. STOP does not stop the timer–it simply displays the time elapsed so far. Since the timer keeps running until reset by a START, you can use successive STOP commands to show an accumulating interval (i.e., to report "split" times). START and STOP can also be used in the same command to display the elapsed time, then reset the clock and start a new time interval.

Adding comments. If you are using more than one timer, or running TM from a batch file, it can become difficult to keep track of which operation a particular TM message is timing. Use the *comment* field in TM STOP commands to keep apprised of what is being timed. If the comment has embedded spaces, the entire comment must be enclosed in quotes. For example:

```
TM STOP "Logged on to Compuserve"
```

TM's four clocks. Time Mark has four totally independent clocks, which are selected with the switches /C1 to /C4. This allows you to time completely separate events. You could, for example, use one clock simply to record how long your computer has been turned on, and a second to record how long you've been running a particular application.

The /L and /N switches. TM normally displays its output on the right side of the screen. Use the /L switch to move the display to the left side of the screen. Use the /N switch if you want TM to display the timed interval but not the date and time of day.

The /LOG switch. TM avoids displaying unnecessary blank lines when writing to your screen, but this makes the output unsuitable for redirection to a file. To ensure properly formatted output, use the /LOG switch when logging to a file or printer.

Background Info

In the course of performing its stopwatch function, TM writes a record of each clock's starting time in a memory area of the IBM PC specifically set aside for such purposes (the intra-application communication area). Other programs may also use this area, but very few do. Computers that are not fully compatible with the IBM PC may not reserve this memory area.

Tips and Suggestions

I use TM to time nearly everything I do on my computer, simply for the enjoyment of it. But TM's stopwatch function has practical uses as well. It can keep track of the time you spend logged on to expensive on-line services, such as The Source or Dow Jones News/Retrieval. You can use it to help you estimate how long a large project will take, by timing part of the work and extrapolating. It can assist in billing when your charges are based on time worked. You can automatically keep a log of your computer's operations by using the /LOG option and directing TM's output to a file.

TM is fully compatible with the Norton Control Center (NCC). Both programs use the same four watches.

Examples

If you want to	Type this command
Start a timing interval	`TM start`

Counter 1 will be reset and started.

Start a second, separate, clock and append the output to the file WRK.LG.

```
TM start /C2/LOG>>wrk.lg
```

Counter C2 will be reset and started; counter C1 will not be affected.

Display the elapsed time since Clock 1 was started

```
TM stop
```

Clock 1 will not be reset or stopped. It will continue to run, so you can display successive intervals by running TM STOP again. Clock 2 will not be affected.

Display the elapsed time since Clock 2 was started, along with an identifying comment.

```
TM stop "identifying" /C2
```

Comments are indispensable in helping you track operations with multiple stopwatches via batch files.

TS–Text Search

Purpose Search for text or data in one or multiple files, across an entire disk, or across the erased file space of an entire disk.

Command Formats

For prompting of What to Search:

TS

For Searching Files

TS [*filespec*] [*search-text*] [/S] [/T] [*commonswitches*]

filespec Specifies the files to be searched.

search-text
The text string to search files for. Use quotes around the string if it contains embedded spaces.

For Searching the Entire Disk

TS [*search-text*] /D [*common-switches*]

For Searching the Erased File Space

TS [*search-text*] /E [*common-switches*]

Common Switches (can be used with all command formats)

/A Automates the search, by automatically answering "yes" to all prompts (i.e., the "Search for more data?" prompt).

/CS Make the search Case Sensitive.

/EBCDIC Specifies that the files being searched are encoded in EBCDIC.

/LOG Converts TS's interactive dialog messages to a form suitable for printing or logging to a file.

/WS Specifies that characters in the IBM PC extended character set (characters in the range ASCII 128 to ASCII 255) are *not* to be considered in the search. By default, TS searches extended characters.

Switches When Searching Files

/S Include Subdirectories in the search.

/T Set non-interactive summary Total mode.

Switches When Searching the Disk or Erased Space

/D Search the entire disk.

/E Search the erased data space of the entire disk.

/C*n* Start searching at cluster *n*.

Description

Text Search searches for text either in text files or anywhere on the disk. When searching for text anywhere on a disk, Text Search can be instructed to search the entire disk (use the /D switch) or to search through the erased file space only (use the /E switch). If you include neither /D, /E, nor any parameters, Text Search will prompt for whether you want to search files, the entire disk, or the erased space.

Four switches can always be used in Text Search. The /EBCDIC switch informs TS that the data files are encoded in EBCDIC; TS will translate the ASCII characters you enter for the search-text into the corresponding EBCDIC codes before searching.

The /WS switch tells TS not to include the eighth bit in comparisons. (All the characters in the IBM PC extended character set have their eighth bit set. Some programs, such as WordStar, use the eighth bit for special purposes.)

Because TS runs in an interactive mode, its output messages are not normally suitable for printing or logging to a file. Use the /LOG switch to format the output messages for printing or logging to a file.

Searching for Data in Files

When you are searching for data in files, you may give all, none, or some of the parameters on the command line. Text Search will prompt you for any parameters you have omitted.

Your filespec can include the DOS wildcard characters ? and *. Use /S if you want the search to extend to subdirectories.

The search-text parameter tells TS what to search for. If your search text is longer than a single word, enclose it within quotes. Unless you include the /CS switch, uppercase and lowercase characters in the search-text are treated alike–that is, the search is *case-insensitive*.

TS normally operates in an interactive mode: Each time it finds an instance of the search text, it pauses, displays several lines of the surrounding context, and asks if it should search for more. This lets you abort the search as soon as you've found what you're looking for. You can automatically answer Yes to each of these prompts by using the /A switch. This is especially useful if you want to log the output, then read over it at a later time all at once.

Alternatively, you can put TS into a non-interactive mode by including the /T (Total) switch. In response to the /T switch, TS simply lists the names of those files in which it finds the search-text. This is *not* the same as using the /A switch, since no surrounding context is shown.

Searching for Data across an Entire Disk

Use the /D switch to search across the entire disk; use the /E switch to search the erased data space of the entire disk. Generally, you need to use Text Search to search across an entire disk only when you are tracking down erased or totally lost data. Since the entire disk is searched, this option can take a while, so you will probably want to use it *only* when you know your data isn't inside a file. When searching the entire disk or the erased data space of an entire disk, Text Search can copy the data it finds into a new file on another drive; TS will ask if you wish to do this and will prompt you for a filename. Since you can't copy to the same disk, you should always specify the drive letter (of a different drive) as part of the filename, as in:

```
a:copy2a
```

If there isn't space for all of the text on the disk you specified, TS will prompt you to insert a new disk.

Text Search can be profitably used when you are UnErasing a file, to locate missing sections of your file.

Tips and Suggestions

TS provides several useful ways to search for data. To get the most out of TS, it's worthwhile to spend a little time experimenting; that way, you'll discover which ways work best for you.

There may be times when you need to know in which files some key word appears but you don't need to see the context. When that's the case, use the /T switch so that TS shows you only the names of the files where your data appears. For example:

```
TS *.doc "Wyoming" /T
```

When you want to see the context in which your text appears, just use TS with no switches:

```
TS *.TXR "IBM"
```

While TS is designed to search for text data (words, letters, numbers, and punctuation), you can use it to search files that aren't ordinary text files. For example, you could search through Lotus spreadsheet files, looking for one that has the label "3rd Q Results":

```
TS *.wk1    "3rd Q Results"
```

Remember that you can specify the filenames and search text either on the command line (as in the example above), or in response to prompts after you've started TS.

You are most likely to have success in finding your data if you search for single key words. If the search text includes any punctuation, or even spaces, TS is less likely to find it, because of the way data is formatted. (For example, a word processor with automatic word wrap might have inserted a carriage return between the two words you use as your search text.) If you need to search for data outside of files, you are more likely to succeed with the /E option than with the /D option (and it will be faster, too).

I use TS often myself, for example, to find in which magazine column or in which book chapter I discussed a particular topic. And I know from letters I get that TS is one of the most used tools in the Utilities set, so I'm confident you'll find it useful as well.

Examples

If you want to	Type this command
Run TS	**TS**

Text Search will prompt for where to search (a file, the entire disk, or the erased data space) and the text to search for.

Search all .DOC files anywhere on the disk for the word "somewhere"	**TS *.doc "somewhere" /s**

The backslash before the filespec causes TS to start the search at the root directory, and the /S switch at the end of the command extends the command to all .DOC files in all subdirectories–in other words, to all files on the disk.

Search the entire disk for the word "somewhere"

```
TS "somewhere" /D
```

This command does not have the same effect as the one above it. This command searches the entire disk, including the erased data space and all files, whereas the previous command searches only in files with the extension .DOC.

See if the word "somewhere" can be found in an erased file.

```
TS "somewhere" /E
```

The /E switch causes TS to look anywhere on the disk that might hold an erased file.

Create a file that lists all the files in the current directory in which the word "somewhere" appears.

```
TS *.doc "somewhere" /A/T/LOG > list
```

The /T switch tells Text Search to print only summary (Total) information, so this command will list just those filenames in which the search text is found, omitting the surrounding context. The /A switch Automates the search, so every time TS would have asked: "Search for more," a yes response is automatically assumed. Neither the /S switch nor a pathname is given, so the search is limited to files in the current directory. The /LOG switch formats the output for file logging. Finally, the report is redirected (via the > character) to a file called LIST.

UD–Unremove Directory

Purpose Recover removed directories and the catalog of erased files they contain.

Command Format

UD [*directory pathname*]

directory pathname
The full pathname of the removed directory

Description To Unremove a directory, type the command, optionally followed by the full pathname of the directory you wish to recover. For example, if you had removed the directory \progs\word, you should type:

```
UD \progs\word
```

If you omit the directory pathname, UD recovers removed directories in the current directory, prompting for the first character of each name.

UD works in two steps. In the first, UD presents each removed directory in the specified parent directory, one at a time. UD shows you all the available information on each removed directory, including its name (except for the first character, which is lost when a directory is removed), and the date and time the directory was created. Once you select a directory to recover, UD asks you for the missing first character of the directory's name. UD then proceeds to the second step.

In the second step, UD recovers the removed directory's data–which is, of course, the list of files (since erased) that were in the directory. UD searches for groups of erased files that may have belonged to the directory you are recovering, and presents each *group* of files, one group at a time. UD presents each group as a list of erased files, displaying the name, size, and date and time stamp of each file. You

file. You may accept or reject each group of files that UD presents, until you find all the erased files that were in the directory.

In searching for groups of erased files that might have been part of the directory you are recovering, UD is often able to tell when it has reached the end of the directory. When that's the case, UD stops searching for data and completes the recovery process. However, there are times when UD cannot tell that it has reached the end of the directory. When UD is unable to tell that it has found the end of the directory after it has found all your erased files, you must explicitly tell it to stop (by answering "N" to the "Search for more?" prompt).

Background Info

Subdirectories are removed with the DOS command RMDIR (also known as RD). Removing a subdirectory is similar to erasing a file. If we erase the files in a subdirectory, then remove that directory, we cannot "UnErase" those files until we "unremove" the directory. That's the reason for this command.

UD recovers directories in a manner similar to that of recovering lost files. However, recovering lost directories presents special technical problems that call for unique recovery methods. NU can give you more control over recovering removed directories.

For a general primer on recovering erased files, see the tutorial on UnErasing at the beginning of this manual.

Tips and Suggestions

If your removed directory had a lot of files in it, you can improve your chances of successfully recovering the entire directory if you write down a list of the erased files you expect to find while recovering the directory's data. It also helps to know approximately how many files were in the removed directory.

If you routinely keep your directories sorted, using DS (Directory Sort), it will be easier to recover a removed directory.

Examples

If you want to	Type this command
Run UD, with prompting for directory name	`UD`
Unremove (recover) the directory \progs\word	`UD \progs\word`

VL–Volume Label

Purpose

View, add, change, or delete a disk label, using both uppercase and lowercase characters.

Command Format

VL [*d*:] [*label*]

Description

Volume Label places the given label on the disk in the specified drive. If no drive is specified, the default drive is used. If no label is specified, Volume Label runs in prompt mode: The current label (if any) is displayed, and you are given a choice of supplying a new label, deleting the old label, or leaving the old label unchanged.

Volume labels may be up to 11 characters long, and may include spaces and lowercase letters. If the volume label you enter on the command line includes spaces, surround the label with quotes. For example:

```
VL "New label"
```

You do not need to use quotes when you enter a volume label in prompt mode. (You may use quotes as part of the label itself in prompt mode, however.)

Background Info

Versions 3.0 and above of DOS have a program called LABEL for changing volume labels. VL gives you even greater control over your labels, allowing you to use lowercase as well as capital letters. When you run VL in prompt mode, you are given a "type-in" field that makes it easy to tailor your label to fit within the 11-character size limit.

Tips and Suggestions

Having your disks labeled can be invaluable when you need to refer to an old disk. Also, since most hard disk backup programs write the disk's volume label at the beginning of each backup set, volume labels can be just as useful on hard disks as on floppies.

Certain programs that use volume labels expect only uppercase letters and will not work if there are lowercase

letters in the label. The DOS FORMAT command (versions 3.0 and later) is an example of such a program; FORMAT prompts for a volume label before going to work, and will not accept a volume label with lowercase letters.

In addition to helping you manage your own catalog of disks, DOS itself is increasingly making use of volume labels as it manages disks. I recommend that you place labels on every disk you use.

Examples

If you want to	Type this command
Change (or add) a volume label	`VL NewLabel`
The disk in the default drive will be given the label NewLabel.	
Change (or add) the label New Label to the disk in the default drive.	`VL "New Label"`
Quotes must be used when you enter a label on the command line that has embedded spaces.	
Run Volume Label in prompt mode.	`VL`
Volume Label will show you the current label, then prompt for input. You can add, change, or delete a label in prompt mode. (Don't use quotes in this mode, unless you actually want quotes in your label.)	

Wipedisk

Purpose Protect confidential data by wiping clear (overwriting) an entire disk or the erased-file portion of an entire disk.

Command Format

WIPEDISK *d*: [*switches*]

d Drive letter of disk to be wiped.

Switches

/E Specifies that only Erased or unused data space is to be wiped. This saves current data while wiping out erased data.

/G*n* Follows certain Government rules for security wiping. *n* specifies the number of times the 1/0 pattern is repeated. The default is 3.

/LOG Presents the program's output messages in a format suitable for logging to a printer or disk file.

/R*n* Sets Repeated wiping; *n* sets the number of times the data will be overwritten. The default is 1.

/V*n* Sets the Value used to overwrite the disk. *n* can be any number from 0 to 255. The default is 0, unless the /G switch is also invoked. If /G is in effect, the default for /V is 246 (F6, hexadecimal).

Description WIPEDISK overwrites (wipes) every portion of a disk, replacing all information with zeros (or with whatever other value you specify via the /V*n* switch). This wipes a disk clean and destroys any confidential data (along with all the other data) that was recorded on the disk.

You may also use WIPEDISK, with the /E switch, to wipe *only* the erased and unused sections of a disk. When you use WIPEDISK with the /E switch, only erased files will be wiped; current files will not be touched.

Both WIPEDISK and WIPEFILE have been modified to meet the latest DOD standards for media protection. The government switch (/G) has been expanded so that you can specify the number of times the 0/1 pattern should be repeated. The latest DOD specifications (DoD 5220.22-M) specify that the 0/1 pattern should be repeated three times, followed by a write of a random value, then a verification of the last write. If you specify the government switch by itself (/G), it will repeat the 0/1 cycle three times. The government switch followed by a number–for example, /G6–will repeat the 0/1 pattern six times.

Background Info

When DOS erases a file, it neither deletes the full filename nor erases the file's data space. Nor can you rely on the DOS FORMAT command to safely overwrite confidential data: FORMAT does *not* overwrite old data under all circumstances. In particular, when you format a hard disk (under most versions of DOS), the old data is not overwritten. Even copying a new file to an older file you wish to wipe out is not guaranteed to succeed; as a matter of fact, with the strategy that newer versions of DOS use to allocate disk space, it most likely *won't* succeed. The only way to be sure that confidential data on a disk is erased is to overwrite it explicitly. Even the Norton Utilities UNERASE program can't recover data that's been obliterated by WIPEDISK.

Tips and Suggestions

Although the WIPEDISK program may appear dangerous, it is not particularly risky to use. WIPEDISK includes several safeguards to protect you from unintentionally losing data.

First, to reduce the chance of accidentally running the WIPEDISK or WIPEFILE programs, these two programs have been given fully descriptive, eight-character names.

Second, the program requires you to confirm your intentions (by typing Y in response to a prompt) before it begins wiping your target disk.

Finally, to reduce the danger of accidentally destroying data that is needed, WIPEDISK starts at the least-used portion of a disk and proceeds toward the most-used portion. You can interrupt the WIPEDISK operation at any time by pressing Ctrl-Break. If WIPEDISK is interrupted before it finishes work, some or all of the data may be preserved.

If you use the /G switch, all data is overwritten after WIPEDISK is finished, including the disk's formatting information. A wiped disk will need to be reformatted before it can be used again.

It often happens that a disk has fragments of confidential data that need to be wiped, but it isn't practical to wipe the disk fully because other data on the disk is needed; this situation is particularly common with hard disks. The /E option of WIPEDISK addresses this problem by letting you wipe away any discarded data, while preserving your current files. Because of this, the /E option is probably the most used of the features available with WIPEDISK.

If you are wary of using WIPEDISK with the /E switch, for fear of omitting the switch, you may wish to invoke it from a batch file. For example, you could rename WIPEDISK.EXE to some very hard-to-type name like _-W~D-_.EXE, and invoke it through a batch file named WIPERASE that contains this line:

```
_-W~D-_ /E
```

That makes it virtually impossible to invoke WIPEDISK accidentally without the /E switch. To use this batch file to wipe the erased data space, simply type:

```
wiperase
```

See the WIPEFILE program for a corresponding program that operates on individual files.

Examples

If you want to	Type this command
Wipe clean the entire disk in the default drive.	`Wipedisk`
This won't work; for safety's sake, WIPEDISK requires that you explicitly specify the drive to be wiped on the command line. See the next example.	
Wipe clean the entire disk in the A: drive.	`Wipedisk A:`
The whole disk will be wiped once with the value 0 (WIPEDISK will prompt for confirmation before going to work).	
Wipe the disk in the A: drive three times with the value 85 (binary 01010101).	`Wipedisk A: /R3/V85`
Wipe the erased data space of the B: drive	`Wipedisk B: /E`
Current files will not be wiped.	

Wipefile

Purpose Protect confidential data by wiping clear (overwriting) selected files.

Command Format

WIPEFILE *filespec* [*switches*]

filespec Specifies the file or files to wipe. *Filespec* may include a drive, pathname, and the DOS wildcard characters ? and *. You must specify the files to be wiped.

Switches

/G*n* Follows certain Government rules for security wiping. *n* specifies the number of times the 1/0 pattern is repeated. The default is 3.

/LOG Presents the program's output messages in a format suitable for logging to a printer or disk file.

/N Non-wiping mode; deletes (erases) files but does not wipe them.

/P Pause for confirmation before wiping and deleting each file.

/R*n* Sets Repeated wiping; *n* sets the number of times the data will be overwritten.

/S Wipe (or delete, if /N is used) files in Subdirectories also.

/V*n* Sets the Value used to overwrite the disk. *n* can be any number from 0 to 255. The default is 0, unless the /G switch is also invoked. If /G is in effect, the default for /V is 246 (F6, hexadecimal).

Description

WIPEFILE overwrites (wipes) or deletes files. Each file that matches the filespec is overwritten (unless the /N switch is used). This protects confidential data by completely obliterating it.

The term "delete" is used here with the same meaning DOS ascribes to it–i.e., the file's directory entry is marked as erased, and the file's data space is marked as being available, but the file data itself is not actually overwritten.

Unless you use the /N switch, WIPEFILE overwrites completely the file's data space as well as the file's directory entry.

You can also use WIPEFILE as a selective *delete* function, by specifying the /N switch. When the /N (No-wipe switch) is used, WIPEFILE *deletes* the file (by marking it as erased) but *overwrites* neither the file's directory entry nor its data space.

If the /P (pause) switch is used, WIPEFILE pauses for a yes-or-no confirmation before wiping each file. Even if /P is *not* specified, WIPEFILE still pauses for confirmation *once*, as a safety measure, before beginning operation.

Both WIPEFILE and WIPEDISK have been modified to meet the latest DOD standards for media protection. The government switch (/G) has been expanded so that you can specify the number of times the 0/1 pattern should be repeated. The latest DOD specifications (DoD 5220.22-M) specify that the 0/1 pattern should be repeated three times, followed by a write of a random value, then a verification of the last write. If you specify the government switch by itself (/G), it will repeat the 0/1 cycle 3 times. The government switch followed by a number–for example, /G6–will repeat the 0/1 pattern six times.

Unless you specify the /R*n* or /G*n* switch, WIPEFILE automatically wipes each file matching filespec once, with binary 0. You can specify the number of times WIPEFILE should wipe each file with the /R (repetitions) option. You can change the wiping value with the /V*n* option, where *n* is any number between 0 and 255.

WIPEFILE is able to find and wipe *hidden*, *system*, and *read-only* files. However, WIPEFILE will always pause for confirmation before wiping any of these file types. (See the File Attributes command for a discussion of the hidden, system, and read-only attributes.)

Background Info

When DOS erases a file, it marks the file's directory entry as deleted but does not overwrite the full filename in the directory or the file's data space. Therefore, if you want to obliterate the data in a file, it's not sufficient to use the DOS ERASE command. Copying another file to the file you wish to obliterate will not necessarily do the trick either; as a matter of fact, with the strategy that the most recent versions of DOS use for allocating disk space, copying a new file over an old one most likely won't succeed in destroying the old file's data. Even formatting a disk doesn't necessarily overwrite the disk data; data from a freshly formatted hard disk is frequently recoverable using the Format Recover program (in the Norton Utilities Advanced Edition).

The only safe way to destroy a file's data is to overwrite the file's data space by means of a program such as WIPEFILE (or wipe the whole disk with WIPEDISK). Even the Norton Utilities UnErase program can't recover a file that's been so obliterated.

Tips and Suggestions

Although the WIPEFILE program may appear dangerous, it is not particularly risky to use. WIPEFILE includes several safeguards to prevent you from wiping files unintentionally. To further reduce the likelihood that you'll unintentionally wipe data, both WIPEFILE and WIPEDISK have been named with fully descriptive eight-character names.

You can avoid mishap with WIPEFILE in two ways: by practicing the operation on a spare disk until you are familiar with it, and by invoking it through a batch file. Using batch files reduces the chance of mistakes, since once you have set up and tested a batch file (on a scratch disk), you will not have to retype any parameters or switches that are specified in the batch file.

For example, you might set up a batch file called WFPAUSE that contains this command:

```
Wipefile %1 /p
```

Now whenever you invoke WFPAUSE to wipe files, as in:

```
Wfpause eyesonly.*
```

your batch file will automatically pause for confirmation before wiping each file. (Even if you omit the /P switch, WIPEFILE still pauses for confirmation once before wiping any files.)

Examples

If you want to	Type this command
Wipe all files with the extension .LTR	`Wipefile *.ltr`
	WIPEFILE pauses once for confirmation before wiping any files.
Pause for confirmation while wiping all .LTR files	`Wipefile *.ltr /P`
	WIPEFILE pauses for confirmation before wiping each file.
Delete all files with the extension .LTR	`Wipefile *.ltr /N`
	With the /N switch, WIPEFILE *erases*, rather than *wipes*, files. These files may be recoverable by means of Quick UnErase or UnErase.

Technical Background Information

Program design and development was done by Brad Kingsbury, Henri Isenberg, and Peter Norton, with help from Linda Dudinyak. The manual was written by Kevin Goldstein and Clint Hicks. The tutorial was developed and written by Kevin Goldstein and Kraig Lane. Special thanks to our dedicated technical support team.

This version of the Norton Utilities was written in C and assembly language, using Microsoft's C Compiler, version 5.0, and Microsoft Macro Assembler, version 5.0. The source code consists of 120,000 lines of C and 18,000 lines of assembly code. Program development was done on Compaq DeskPro 386/16 computers, with testing on a variety of other machines.

Among the tools that assisted in the development of the Norton Utilities are Dan Bricklin's Demo II program, from Peter Norton Computing, The Norton Editor, and CodeView, a source-level debugging tool from Microsoft.

The manual was designed and prepared using (and eventually, after much grief, beaten out of) Microsoft Word on a Radius FPD and Accelerator16-equipped Macintosh SE driving a LaserWriter II NT printer.

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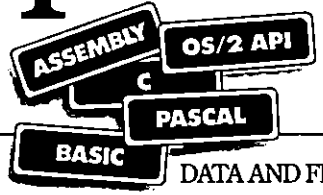

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- IBM BASICA, Microsoft QuickBASIC and TurboBASIC.
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- Library Functions: Detailed descriptions of all functions.
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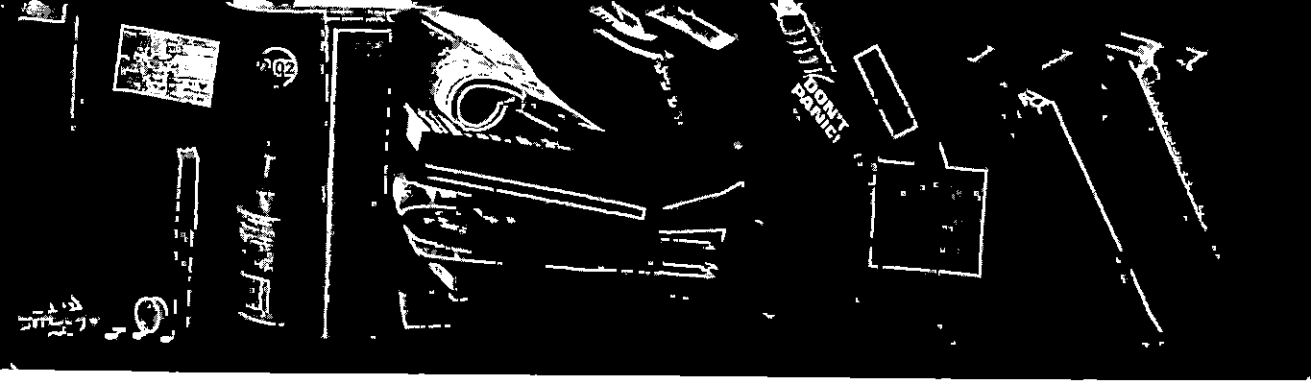

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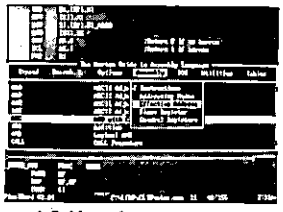

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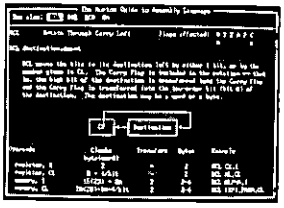

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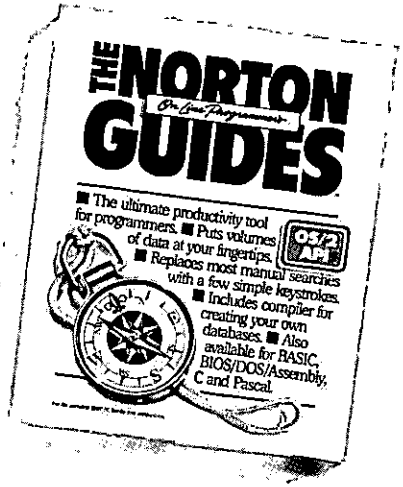

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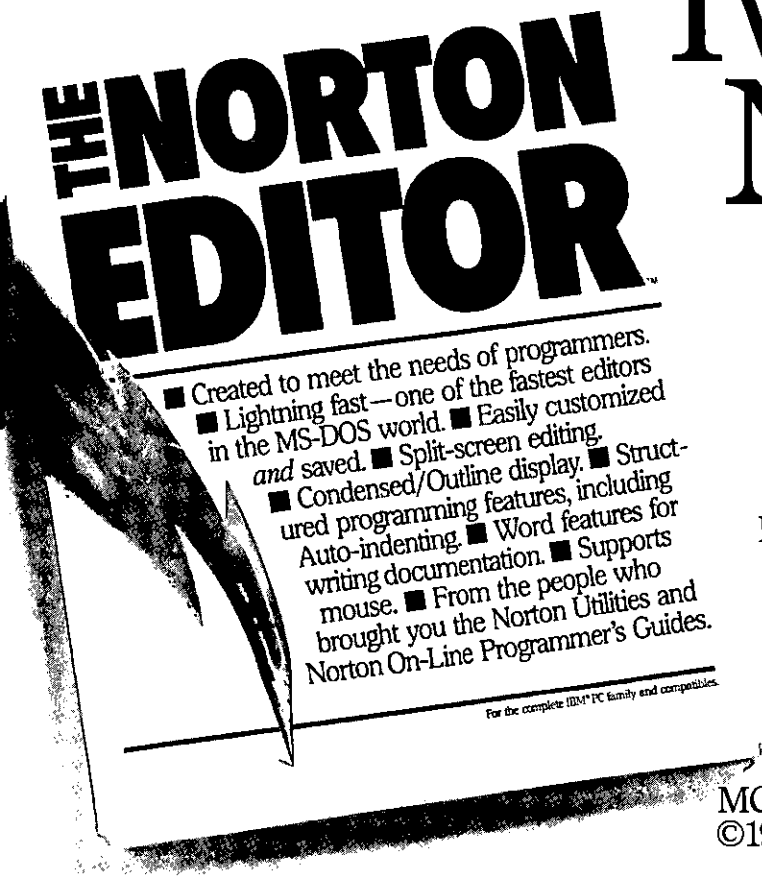

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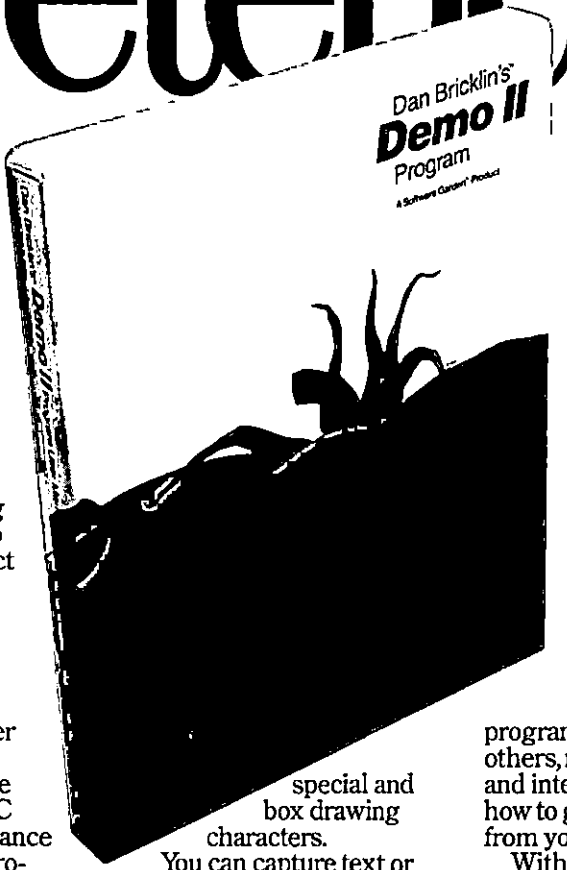

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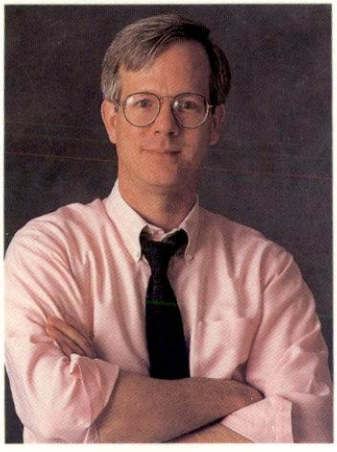

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